```
     FILE 'REGISTRY' ENTERED AT 15:18:57 ON 08 APR 2002
L1           348 S (TI AND O)/ELS AND 2/ELC.SUB
L2           139 S (TA AND O)/ELS AND 2/ELC.SUB
L3             5 S (W AND S AND N)/ELS AND 3/ELC.SUB
L4             4 S (TA AND AL AND O AND N)/ELS AND 4/ELC.SUB
L5            43 S (TA AND AL AND O)/ELS AND 3/ELC.SUB
L6           141 S (AL AND O AND N)/ELS AND 3/ELC.SUB
L7             1 S PT/CN
L8             3 S AU/CN
L9             2 S MO/CN
L10            3 S TA/CN
L11            1 S IRIDIUM/CN
L12            1 S RU/CN
L13            3 S CR/CN
   FILE 'HCAPLUS' ENTERED AT 15:22:19 ON 08 APR 2002
L14       439968 S PT OR PLATINUM OR AU OR GOLD
L15       585582 S MOLYBDENUM OR MO OR TANTALUM OR TA
L16       533308 S IRIDIUM OR IR OR RUTHERNIUM OR RU
L17       459264 S CHROMIUM OR CR
L18        32613 S EMITTER OR ECL
L19         4571 S (CATHODE (2N)LAYER) OR (FUSED(2N) ELECTROLYTE)
L20           60 S ELETRON
L21         4558 S (TUNNEL?)(3N)(FILM? OR LAYER? OR COAT####)
L22       225148 S (METAL#### OR ALLOY? OR AMALGAM? OR INGOT? OR BULLION?)(5N)(D
L23          123 S L1 AND L18
L24           36 S L2 AND L18
L25            0 S L3 AND L18
L26            0 S L4 AND L18
L27            0 S L5 AND L18
L28            1 S L6 AND L18
L29           25 S L23 AND L22
L30            1 S L23 AND L21
L31            0 S L30 NOT L29
L32          144 S L18 AND L19
L33            1 S L32 AND L21
L34            0 S L32 AND L20
L35        75276 S TITANIUM(2N)MONOXIDE OR TITANIUM(2N)OXIDE
L36          109 S L35 AND L18
L37            1 S TUNGSTEN NITRIDE SULFIDE
L38            4 S ALUMINUM TANTALUM NITRIDE OXIDE
L39          119 S ALUMINUM TANTALUM OXIDE
L40         1160 S ALUMINUM NITRIDE OXIDE
L41            0 S TANTALAM OXIDE
L42            0 S L37 AND L18
L43        13414 S TANTALUM OXIDE
L44            0 S L38 AND L18
L45            0 S L39 AND L18
L46            0 S L40 AND L18
L47           52 S L43 AND L18
L48           24 S L36 AND (L21 OR L22)
L49           11 S L48 NOT L29
L50         5947 S L18 AND (L7-17)
L51           38 S L50 AND L19
L52           37 S L51 NOT (L49 OR L29)
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L30 ANSWER 1 OF 1 HCAPLUS COPYRIGHT 2002 ACS
AN 1993:615789 HCAPLUS
DN 119:215789
TI Insulating channel dielectric-base transistor
IN Tamura, Yasutaka
PA Fujitsu Ltd, Japan
SO Jpn. Kokai Tokkyo Koho, 8 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 05198854	A2	19930806	JP 1992-9026	19920122

AB The transistor comprises a base region having a high dielec. const., an **emitter** electrode on 1 side of the base region through a 1st barrier layer having a dielec. const. lower than that of the base region, an collector electrode through a 2nd barrier layer of the same type, and a base electrode on the other side through a 3rd barrier layer with height and thickness to prevent carrier tunneling. The 3rd barrier layer may have the dielec. const. higher than those of the 1st and 2nd barrier layers. The transistor may comprise an insulating substrate successively covered with the dielec. base region layer, the 3rd barrier layer and the base electrode. The base electrode may be made of an impurity-doped or quasi-stoichiometric base region material. The **emitter**, collector, and/or base electrode may consist of metal or oxide superconductor. The base region may consist of oxide contg. Sr, Ti, K, Ta, Sn, Zr, or Nb. The base region may consist of KTa1-xNbxO3, having controlled temp. of the max. dielec. const. with the Nb content.

L29 ANSWER 1 OF 25 HCAPLUS COPYRIGHT 2002 ACS
AN 2002:158258 HCAPLUS
DN 136:209298
TI Process for producing electron emission cathode
IN Miyamoto, Hiroyuki; Iseki, Misao; Arai, Manabu; Tamai, Hideaki; Kimura, Chikao
PA New Japan Radio Co., Ltd., Japan
SO U.S. Pat. Appl. Publ., 20 pp.
CODEN: USXXCO
DT Patent
LA English
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 2002024280	A1	20020228	US 2001-934212	20010821
	JP 2002075165	A2	20020315	JP 2000-262091	20000831
	DE 10142396	A1	20020314	DE 2001-10142396	20010830
	US 2002024281	A1	20020228	US 2001-971226	20011003
PRAI	JP 2000-262091	A	20000831		
	US 2001-934212	A2	20010821		

AB There is provided a cathode which is easily operable, harmless, and stable at high temp. .gtoreq.1,400.degree. as well as excellent in electron emission characteristics at the same time, and the process for prepg. the same. The cathode of the present invention comprises a polycryst. substance or a polycryst. porous substance of high-m.p. metal material and an **emitter** material dispersed into the polycryst. substance or polycryst. porous substance, in which 0.1-30% by wt. of .gtoreq.1 selected from the group consisting of Hf oxide, Zr oxide, La oxide, Ce oxide and Ti oxide is dispersed in the **emitter** material.

IT Molding
(isostatic pressing, cold; process for producing electron emission cathode)
IT Electron emission
(process for producing electron emission cathode)
IT 11126-28-6, Titanium tungstate 12737-23-4, Cerium tungsten oxide 37382-36-8, Lanthanum tungstate 39290-95-4, Zirconium tungstate 51680-39-8, Hafnium tungsten oxide
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PYP (Physical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(compd. layer on electron emission surface; process for producing electron emission cathode)
IT 1333-74-0, Hydrogen, processes
RL: CPS (Chemical process); NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(dispersion of **emitter** materials in atm. of; process for producing electron emission cathode)
IT 1314-35-8, Tungsten oxide, processes 7439-98-7, Molybdenum, processes 7440-33-7, Tungsten, processes
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PYP (Physical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(**emitter** materials; process for producing electron emission cathode)
IT 11130-73-7, Tungsten carbide 12627-57-5, Molybdenum carbide
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PYP (Physical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)

(layer on electron emission surface; process for producing electron emission cathode)

IT 1312-81-8, Lanthanum oxide 1314-23-4, Zirconium oxide, processes 7439-88-5, Iridium, processes 7440-04-2, Osmium, processes 7440-15-5, Rhenium, processes 7440-18-8, Ruthenium, processes 11129-18-3, Cerium oxide 12055-23-1, Hafnium oxide **13463-67-7**, Titanium oxide (TiO2), processes
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PYP (Physical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(mixed with **emitter** materials; process for producing electron emission cathode)

L29 ANSWER 2 OF 25 HCAPLUS COPYRIGHT 2002 ACS
AN 2001:792159 HCAPLUS
DN 135:337040
TI Liquid crystal display having swithing device driven by ultraviolet beam irradiation
IN Kido, Masami
PA Sharp Corp., Japan
SO Jpn. Kokai Tokkyo Koho, 10 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2001305572	A2	20011031	JP 2000-119375	20000420

AB The display device has an elec. switching device involving a **metal oxide** layer with energy band gap in UV region, i.e., .gtoreq.3.0 eV, and the **metal oxide** layer is irradiated with UV from a stripe light source in the device so that the elec. current is regulated for switching elec. voltage onto the liq. crystal. Alternatively, the **metal oxide** layer is assocd. with another **metal oxide** layer as a barrier layer, on which a diode involving an anode and a cathode is formed for regulation of elec. current. A transistor may be formed with an **emitter** electrode and a collector electrode on the barrier **metal oxide** layer and a base electrode on the former **metal oxide** layer, wherein elec. current between the **emitter** and the collector is regulated by elec. voltage on the base electrode under irradn. on the former **metal oxide**. The voltage on the liq. crystal may be regulated by metal-insulator-metal (MIM) structure on the former **metal oxide** layer.

IT Electric switches
Liquid crystal displays
UV radiation
(display device having UV irradn.-driven switching device for applying elec. voltage on liq. crystal)

IT Diodes
Thin film transistors
Transistors
(in display device having UV irradn.-driven switching device for applying elec. voltage on liq. crystal)

IT Electroluminescent devices
(light source; in display device having UV irradn.-driven switching device for applying elec. voltage on liq. crystal)

IT 7631-86-9, Silica, uses 12060-59-2, Strontium titanium oxide (SrTiO3) **13463-67-7**, Titania, uses

RL: DEV (Device component use); USES (Uses)
(film; in display device having UV irradn.-driven switching device for applying elec. voltage on liq. crystal)

L29 ANSWER 3 OF 25 HCAPLUS COPYRIGHT 2002 ACS
AN 2000:667007 HCAPLUS
DN 133:225600
TI An aluminum alloy back junction solar cell and a process for fabrication thereof
IN Meier, Daniel L.; Davis, Hubert P.; Garcia, Ruth A.; Salami, Jalal
PA Ebara Solar, Inc., USA
SO PCT Int. Appl., 39 pp.
CODEN: PIXXD2
DT Patent
LA English
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2000055923	A1	20000921	WO 2000-US2609	20000201
	W: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
	RW: GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
	US 6262359	B1	20010717	US 1999-414990	19991007
	BR 2000009085	A	20020102	BR 2000-9085	20000201
	EP 1166367	A1	20020102	EP 2000-930073	20000201
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
	TW 449933	B	20010811	TW 2000-89102645	20000216
PRAI	US 1999-124797P	P	19990317		
	US 1999-414990	A	19991007		
	WO 2000-US2609	W	20000201		

AB A process for fabricating a solar cell includes: providing a base layer, and fabricating an **emitter** layer of p-type cond. on a same side as the non-illuminated surface of the base layer to provide a strongly doped p-type **emitter** layer and a p-n junction between the n-type base layer and the p-type **emitter** layer. The base layer of the present invention has n-type cond. and is defined by an illuminated surface and a non-illuminated surface which is opposite to the illuminated surface.

IT Bridgman crystal growth
Czochralski crystal growth
Electric contacts
Screen printing
Solar cells
(aluminum alloy back junction solar cell and process for fabrication thereof)

IT Casting of metals
(directional solidification; aluminum alloy back junction solar cell and process for fabrication thereof)

IT Crystal growth
(edge-defined **film**-fed; aluminum **alloy** back junction solar cell and process for fabrication thereof)

IT Crystal growth

(floating-zone; aluminum alloy back junction solar cell and process for fabrication thereof)
IT 7440-21-3, Silicon, uses 7440-22-4, Silver, uses 11145-27-0
RL: DEV (Device component use); USES (Uses)
(aluminum alloy back junction solar cell and process for fabrication thereof)
IT 7429-90-5, Aluminum, uses
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(aluminum alloy back junction solar cell and process for fabrication thereof)
IT 7723-14-0, Phosphorus, uses
RL: MOA (Modifier or additive use); USES (Uses)
(aluminum alloy back junction solar cell and process for fabrication thereof)
IT 12033-89-5, Silicon nitride, uses **13463-67-7**, Titania, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(antireflective coating; aluminum alloy back junction solar cell and process for fabrication thereof)
IT 11099-22-2
RL: DEV (Device component use); USES (Uses)
(eutectic; aluminum alloy back junction solar cell and process for fabrication thereof)
RE.CNT 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L29 ANSWER 4 OF 25 HCAPLUS COPYRIGHT 2002 ACS
AN 2000:191404 HCAPLUS
DN 132:243723
TI Cathodoluminescent solid-state lasers
IN Leksono, Moeljanto W.; Qiu, Chang-hua; Pankove, Jacques Isaac
PA Astralux, Inc., USA
SO PCT Int. Appl., 32 pp.
CODEN: PIXXD2
DT Patent
LA English
FAN.CNT 2

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2000016454	A1	20000323	WO 1999-US21585	19990917
	W: CA, JP, MX				
	RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
	US 6067308	A	20000523	US 1998-154813	19980917
PRAI	US 1998-154813	A	19980917		

AB Solid-state lasers are described which comprise an elongated, single crystal **metal oxide** body selected from the group Al2O3 (sapphire), ZnO, MgO, LiNbO3, TiO3, SrTiO3, BaTiO3, and quartz doped with .gtoreq.1 of erbium, terbium, praseodymium, neodymium, samarium, europium, dysprosium, holmium, thulium, and ytterbium and with a rare earth-ionizing element selected from the group oxygen and fluorine (which ionize the .gtoreq.1 rare earth elements); an elongated electron **emitter** spaced from and aligned with the elongated single cryst. **metal oxide** body so that kinetic electrons emitted from the electron **emitter** impact the .gtoreq.1 rare earth elements and raise the energy of electrons of the .gtoreq.1 rare earth elements to an excited state above a ground state, so that upon return of the .gtoreq.1 rare earth elements to the ground state, radiation is emitted by the .gtoreq.1 rare earth elements; and means to render the emitted radiation coherent.

The means to render the emitted radiation coherent may be a Fabry-Perot cavity that includes the **metal oxide** body or an acoustic generator that is assocd. with the **metal oxide** body in a manner to produce a standing wave within the **metal oxide** body.

IT Solid state lasers
(cathodoluminescent solid-state lasers)

IT Rare earth metals, uses
RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)
(cathodoluminescent solid-state lasers)

IT Visible lasers
(solid-state; cathodoluminescent solid-state lasers)

IT 1309-48-4, Magnesium oxide (MgO), uses 1314-13-2, Zinc oxide (ZnO), uses **1344-55-4**, Titanium trioxide 7631-86-9, Silica, uses 12031-63-9, Lithium niobate 12047-27-7, Barium titanate, uses 12060-59-2, Strontium titanate **13463-67-7**, Titania, uses
RL: DEV (Device component use); USES (Uses)
(cathodoluminescent solid-state lasers)

IT 7429-91-6, Dysprosium, uses 7440-00-8, Neodymium, uses 7440-10-0, Praseodymium, uses 7440-19-9, Samarium, uses 7440-27-9, Terbium, uses 7440-30-4, Thulium, uses 7440-52-0, Erbium, uses 7440-53-1, Europium, uses 7440-60-0, Holmium, uses 7440-64-4, Ytterbium, uses 7782-41-4, Fluorine, uses 7782-44-7, Oxygen, uses
RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)
(cathodoluminescent solid-state lasers)

IT 18195-92-1, Erbium +2, uses 18472-30-5, Erbium +3, uses
RL: DEV (Device component use); MOA (Modifier or additive use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(cathodoluminescent solid-state lasers)

IT 1344-28-1, Alumina, uses
RL: DEV (Device component use); USES (Uses)
(sapphire-type; cathodoluminescent solid-state lasers)

RE.CNT 1 THERE ARE 1 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L29 ANSWER 5 OF 25 HCAPLUS COPYRIGHT 2002 ACS
AN 1998:790410 HCAPLUS
DN 130:60002
TI Multilayer composite electrodes for discharge lamps
IN Mehrotra, Vivek; Betrabet, Hemant S.; McGee, Susan; McGee, Thomas F.
PA Philips Electronics North America Corporation, USA
SO U.S., 13 pp.
CODEN: USXXAM
DT Patent
LA English
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 5847498	A	19981208	US 1994-363184	19941223
	US 5847497	A	19981208	US 1997-832895	19970403
PRAI	US 1994-363184		19941223		

AB Composite sintered electrodes with improved properties that make them suitable for use in a variety of lamp types are provided which comprise a refractory metal and a substantial amt. of a refractory **emitter** oxide, either single layer or multilayer, the composites having been subjected to sintering at an elevated temp. effective to form a composite electrode having a d. of .gtoreq.85%, preferably in the presence of a

sintering activator, e.g., Ni, or its mixt. with a sintering aid, e.g., Li2O.

IT Sintering aids
(for multilayer composite electrodes for discharge lamps)

IT Electric discharge lamps
Electrodes
(multilayer composite electrodes for discharge lamps)

IT Alkali **metal oxides**
Group VIII elements
Refractory **metal oxides**
Refractory metals
RL: DEV (Device component use); USES (Uses)
(multilayer composite electrodes for discharge lamps contg.)

IT Sintering
(of multilayer composite electrodes for discharge lamps)

IT 7440-33-7, Tungsten, uses 12009-21-1, Barium zirconate 12009-63-1, Barium titanium oxide (Ba2TiO4) 12047-27-7, Barium titanate, uses **13463-67-7**, Titanium dioxide, uses 66103-41-1, Barium tantalum oxide 120898-04-6, Barium strontium zirconium oxide (Ba0.5Sr0.5ZrO3) 132826-58-5, Barium yttrium oxide
RL: DEV (Device component use); USES (Uses)
(multilayer composite electrodes for discharge lamps contg.)

IT 7440-02-0, Nickel, processes
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(sintering activator; for multilayer composite electrodes for discharge lamps)

IT 12057-24-8, Lithium oxide (Li2O), processes
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(sintering aid; for multilayer composite electrodes for discharge lamps)

RE.CNT 19 THERE ARE 19 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L29 ANSWER 6 OF 25 HCAPLUS COPYRIGHT 2002 ACS
AN 1998:545669 HCAPLUS
DN 129:182053
TI Silver halide photosensitive material and sensor for monitoring its movement in automatic conveyer
IN Ito, Hirohide; Fukui, Makoto
PA Konica Co., Japan
SO Jpn. Kokai Tokkyo Koho, 15 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 10221809	A2	19980821	JP 1997-23802	19970206

AB The material comprises a transparent support having thereon a light-sensitive Ag halide emulsion layer with Ag content <4.0 g/m2 and a layer contg. particles of .gtoreq.1 **metallic oxide** selected from In2O3, SnO2, ZnO, Al2O3, and TiO2 having n .gtoreq.1.50 and 0.2-3.0 .mu.m diam., which scatters IR rays and transmits a visible light. The monitoring method is characterized by the followings: (a) an IR sensor comprising a pair of an IR ray **emitter** and an IR detector is used; (B) IR ray from the **emitter** is scattered by the material; (C) increase of scattered ray is monitored by the detector. A photog. material with low Ag content can be detected by the method without affecting the characteristics of the material.

IT IR detectors
(for monitoring movement of photog. **film** having emulsion-protecting layer contg. **metal oxide** for IR scattering in automatic conveyer)
IT Photographic films
(photog. **film** having emulsion-protecting layer contg. **metal oxide** for IR scattering)
IT Transparent materials
(support; photog. **film** having emulsion-protecting layer contg. **metal oxide** for IR scattering)
IT 1312-43-2, Indium oxide (In2O3) 1314-13-2, Zinc oxide, uses 1344-28-1, Alumina, uses **13463-67-7**, Titania, uses 18282-10-5, Tin oxide (SnO2)
RL: TEM (Technical or engineered material use); USES (Uses)
(particle; photog. **film** having emulsion-protecting layer contg. **metal oxide** for IR scattering)

L29 ANSWER 7 OF 25 HCAPLUS COPYRIGHT 2002 ACS
AN 1998:421628 HCAPLUS
DN 129:126317
TI Super cleaning of closed space by UV/photoelectron method using photocatalyst
AU Fujii, Toshiaki; Suzuki, Tsukuru; Sakamoto, Kazuhiko; Yokoyama, Shin; Hirose, Masataka
CS Ebara Res. Co., Ltd., Fujisawa, 251-8502, Japan
SO Earozoru Kenkyu (1998), 13(2), 110-118
CODEN: EAKEEA; ISSN: 0912-2834
PB Nippon Earozoru Gakkai
DT Journal
LA Japanese
AB A new super cleaning equipment of a closed space using a photocatalyst (TiO2) in a UV/photoelectron method was developed. The newly developed equipment has photocatalyst between photoelectron **emitter** and electrode (charging space) in the UV/photoelectron equipment to remove gaseous contaminants, such as hydrocarbons. The equipment developed in this work is characterized as follows:. 1) It can create a super clean space in which both gaseous contaminants, such as hydrocarbons, ammonia and particles are removed simultaneously, 2) when Si wafer or metallic substrates are set in the clean space inside such an equipment, surface contamination of the substrates is prevented, 3) in evaluation of actual electron device using MOS (**Metal-Oxide**-Semiconductor) capacitor, the reliability of gate oxides is improved in the time dependent dielec. breakdown (TDDB) characteristics.
IT Semiconductor materials
(manuf. of; super cleaning of closed space by UV/photoelectron method using photocatalyst)
IT Air purification
(photocatalytic; super cleaning of closed space by UV/photoelectron method using photocatalyst)
IT Airborne particles
(super cleaning of closed space by UV/photoelectron method using photocatalyst)
IT Hydrocarbons, processes
RL: REM (Removal or disposal); PROC (Process)
(super cleaning of closed space by UV/photoelectron method using photocatalyst)
IT **13463-67-7**, Titanium oxide (TiO2), uses
RL: CAT (Catalyst use); USES (Uses)
(super cleaning of closed space by UV/photoelectron method using

photocatalyst)
IT 7664-41-7, Ammonia, processes
RL: REM (Removal or disposal); PROC (Process)
(super cleaning of closed space by UV/photoelectron method using photocatalyst)

L29 ANSWER 8 OF 25 HCAPLUS COPYRIGHT 2002 ACS
AN 1997:571375 HCAPLUS
DN 127:170256
TI Electron **emitters**, electron sources, and display devices
IN Shibata, Masaaki; Tsukamoto, Takeo; Iwasaki, Tatsuya
PA Canon K. K., Japan
SO Jpn. Kokai Tokkyo Koho, 23 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 09167584	A2	19970624	JP 1995-347547	19951218

AB In electron **emitters**, 1 side of elec. conductive films regarding electron emission parts is covered with **metal films** (e.g., refractory type), while the other with **metal oxide films**. The electron **emitters** have excellent emission characteristic and long life. Electron sources and display devices using the electron **emitters** are also described.
IT Electrooptical imaging devices
(elec. conductive **films** covered with **metal oxides** for electron **emitters**, electron sources and)
IT Electric conductors
(elec. conductive **films** covered with **metal oxides** for electron **emitters**, electron sources, and display devices)
IT Refractory **metal oxides**
Refractory **metals**
RL: DEV (Device component use); USES (Uses)
(elec. conductive **films** covered with **metal oxides** for electron **emitters**, electron sources, and display devices)
IT Cathodes
Electron emission
(electron **emitters**, electron sources, and display devices)
IT 1304-28-5, Barium oxide (BaO), uses 1305-78-8, Calcium oxide (CaO), uses 1312-81-8, Lanthanum oxide (La2O3) 1314-36-9, Yttrium oxide (Y2O3), uses 12055-23-1, Hafnium oxide (HfO2) **13463-67-7**, Titania, uses
RL: DEV (Device component use); USES (Uses)
(elec. conductive **films** covered with **metal oxides** for electron **emitters**, electron sources, and display devices)

L29 ANSWER 9 OF 25 HCAPLUS COPYRIGHT 2002 ACS
AN 1997:211126 HCAPLUS
DN 126:206544
TI Electron-emitting device, an electron source and image-forming apparatus using it, and their manufacture
IN Shibata, Masaaki; Yamanobe, Masato; Tsukamoto, Takeo; Yamamoto, Keisuke; Arai, Yutaka
PA Canon K. K., Japan
SO Eur. Pat. Appl., 47 pp.

CODEN: EPXXDW
DT Patent
LA English
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 757371	A2	19970205	EP 1996-305645	19960731
	EP 757371	A3	19970409		
	EP 757371	B1	20001025		
	R: DE, FR, GB, IT, NL				
	JP 09102267	A2	19970415	JP 1996-197272	19960726
	JP 3174999	B2	20010611		
	CN 1148728	A	19970430	CN 1996-112123	19960801
	US 6184610	B1	20010206	US 1996-690964	19960801
	CA 2182647	AA	19970204	CA 1996-2182647	19960802
	AU 9660884	A1	19970206	AU 1996-60884	19960802
	AU 711404	B2	19991014		
PRAI	JP 1995-216527	A	19950803		
	JP 1995-216542	A	19950803		
	JP 1995-216543	A	19950803		
	JP 1996-197272	A	19960726		

AB An electron-emitting device comprises a pair of oppositely disposed device electrodes and an elec. conductive film elec. connecting the device electrodes and having an electron-emitting region formed as part of it. The elec. conductive film is partly or entirely covered by a **metal oxide** coating contg., as a principal ingredient, a **metal oxide** different from the material of the elec. conductive film, and having a higher m.p. and a lower work function than those of the principal ingredient of the elec. conductive film. The elec. conductive film also has a deposited layer comprising C, a C compd., or their mixt.

IT Oxides (inorganic), processes
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(manuf. of electron **emitters** contg.)

IT Electron sources
Optical imaging devices
(manuf. of electron **emitters** for)

IT Cathodes
(manuf. of electron **emitters** for electron sources and image-forming app.)

IT Television
(manuf. of electron **emitters** for imaging devices for)

IT 1304-28-5, Barium oxide (BaO), processes 1304-56-9, Beryllium oxide (BeO) 1305-78-8, Calcium oxide (CaO), processes 1309-48-4, Magnesium oxide (MgO), processes 1312-81-8, Lanthanum oxide (La2O3) 1314-08-5, Palladium oxide (PdO) 1314-23-4, Zirconium oxide (ZrO2), processes 1314-35-8, Tungsten oxide (WO3), processes 1314-36-9, Yttrium oxide (Y2O3), processes 1332-37-2, Iron oxide, processes 1344-28-1, Aluminum oxide (Al2O3), processes 7440-02-0, Nickel, processes 7440-05-3, Palladium, processes 7440-06-4, Platinum, processes 7440-32-6, Titanium, processes 7440-47-3, Chromium, processes 7440-57-5, Gold, processes 7631-86-9, Silica, processes 12055-23-1, Hafnium oxide **13463-67-7**, Titanium oxide (TiO2), processes 37300-04-2, Thorium oxide
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(manuf. of electron **emitters** contg.)

L29 ANSWER 10 OF 25 HCAPLUS COPYRIGHT 2002 ACS

AN 1996:393763 HCAPLUS
DN 125:45020
TI Detection method of silver halide photographic material
IN Shibata, Minoru; Kubota, Toshiharu; Egashira, Tetsutaro; Oda, Toshihiro; Ito, Yoshimitsu
PA Fuji Photo Film Co Ltd, Japan
SO Jpn. Kokai Tokkyo Koho, 10 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 08095198	A2	19960412	JP 1994-254660	19940922

AB A silver halide photog. material with Ag content .ltoreq.4.0 g/m2 composed of a transparent support, a photosensitive Ag halide emulsion layer formed on the support, and a layer, which reflects IR and transmits visible radiation, contg. .gtoreq.1 **metal oxide** selected from In2O3, SnO2, ZnO, Al2O3, and TiO2, is detected with an IR sensor composed of an IR **emitter** and a receptor by detecting the redn. of IR transmittance while the photog. material is going through between the IR **emitter** and the receptor. The layer may be a primer formed between the support and the emulsion layer.
IT Electrophotography
Infrared radiation
(detection method of silver halide photog. material with IR sensor)
IT Optical detectors
(IR, detection method of silver halide photog. material with IR sensor)
IT 7785-23-1, Silver bromide
RL: TEM (Technical or engineered material use); USES (Uses)
(detection method of silver halide photog. material with IR sensor)
IT 1312-43-2, Indium oxide (In2O3) 1314-13-2, Zinc oxide, uses 1344-28-1, Alumina, uses **13463-67-7**, Titania, uses 18282-10-5, Tin oxide (SnO2) 50926-11-9, ITO
RL: TEM (Technical or engineered material use); USES (Uses)
(in IR-reflective and visible radiation-transmit layer; detection method of silver halide photog. material with IR sensor)

L29 ANSWER 11 OF 25 HCAPLUS COPYRIGHT 2002 ACS
AN 1995:531138 HCAPLUS
DN 122:325874
TI Strongly-directed emission from microcavity structure in electroluminescent diodes with europium complex as an **emitter**
AU Takada, Noriyuki; Tsutusi, Tetsuo; Saito, Shogo
CS Dep. Maters. Sci. and Technol., Kyushu Univ., Fukuoka, 816, Japan
SO Synth. Met. (1995), 71(1-3), 2099-100
CODEN: SYMEDZ; ISSN: 0379-6779
DT Journal
LA English
AB Multilayer electroluminescent (EL) diodes with sharp red emission were fabricated using an Eu complex as an **emitter**. Microcavity structures were introduced into the EL diodes with sharp red emission. The device structures were composed of pairs of TiO2/SiO2 dielec. reflector, In-Sn-oxide electrode, hole transport layer (HTL), Eu complex as an emission layer (EML), electron transport layer (ETL) and MgAg electrode. The **dielec**. reflector and the MgAG **metal** electrode constituted a planar microcavity. Sharply directed emission from Eu complex was obsd. when operated under d.c. drive voltage at room temp. In fabricating such EL diodes with optical microcavity made of

dielec. reflector and a **metal** mirror, the best total thickness of the org. layers depends on the stack structure of dielec. reflector.

IT Electroluminescent devices
(strongly-directed emission from microcavity structure in electroluminescent diodes with europium complex as **emitter**)

IT **13463-67-7**, Titanium oxide (TiO2), uses 50926-11-9, ITO 60676-86-0, Vitreous silica 65181-78-4 138372-67-5 157474-24-3
RL: DEV (Device component use); USES (Uses)
(strongly-directed emission from microcavity structure in electroluminescent diodes with europium complex as **emitter**)

L29 ANSWER 12 OF 25 HCAPLUS COPYRIGHT 2002 ACS
AN 1995:516262 HCAPLUS
DN 122:251745
TI Manufacture of far-IR radiator sheet material
IN Oikawa, Jusuke
PA Shinnippon Seitetsu Kk, Japan
SO Jpn. Kokai Tokkyo Koho, 4 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 06299341	A2	19941025	JP 1993-104906	19930408

AB A far-IR radiating sheet material, suited for use in heaters, is made by forming a Ti **oxide** thin **film** on a **metal** plate by ion plating in an Ar atm. with an O2 partial pressure 0.4-0.6 mtorr.

IT Infrared sources
(far-, manuf. of far-IR **emitter** sheet)

IT **12137-20-1**, Titanium monoxide **13463-67-7**, Titania, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(manuf. of far-IR **emitter** sheet)

L29 ANSWER 13 OF 25 HCAPLUS COPYRIGHT 2002 ACS
AN 1994:566729 HCAPLUS
DN 121:166729
TI Molecular-Level Electron Transfer and Excited State Assemblies on Surfaces of **Metal Oxides** and Glass
AU Meyer, Thomas J.; Meyer, Gerald J.; Pfennig, Brian W.; Schoonover, Jon R.; Timpson, Cliff J.; Wall, Jennifer F.; Kobusch, Claus; Chen, Xiaohong; Peek, Brian M.; et al.
CS Department of Chemistry, University of North Carolina, Chapel Hill, NC, 27599-3290, USA
SO Inorg. Chem. (1994), 33(18), 3952-64
CODEN: INOCAJ; ISSN: 0020-1669
DT Journal
LA English
AB A general procedure is described for the attachment to antimony-doped tin dioxide (SnO2:Sb), tin-doped indium oxide(In2O3:Sn), or glass surfaces of mols. with known electron transfer or excited state properties, e.g. [Ru(bpy)2(4,4-(CO2H)2bpy)](PF6)2 (bpy = 2,2'-bipyridine; 4,4-(CO2H)2bpy = 4,4-dicarboxy-2,2'-bipyridine), based on the interaction between surface hydroxyls and carboxylic acid groups. Integrations of cyclic voltammetric waveforms on the **metal oxide** electrodes give max. surface coverages of .GAMMA. .apprx. 1 .times.10-10 mol/cm2 for the ruthenium complex, which corresponds to a monolayer coverage. At. force

microscope (AFM) measurements reveal that the **metal oxide** surfaces are highly roughened with root mean square roughnesses in the range 4-6.5 nm for tin oxide. The smaller orgs., N-methyl-N-viologenpropanoic acid bis(hexafluorophosphate), [MV-CO2H](PF6)2, and 10H-phenothiazine-10-propanoic acid, PTZ-CO2H, display similar surface coverages. Resonance Raman measurements on surfaces contg. the ruthenium complex imply that attachment to SnO2, In2O3, and TiO2 is via an ester bond. For SiO2, two modes of binding are suggested, a majority involving a chelating carboxylato link and a minority, ester formation. Binding consts. for surface attachment were measured in CH2Cl2 at 298 K by equilibration, which gave K = 8 .times. 104 M-1 on both SnO2:Sb and In2O3:Sn. Surface mol. assemblies have been prepd. contg. [Ru(bpy)2(4,4-(CO2H)2bpy)](PF6)2 and [Os(bpy)2(4,4-(CO2H)2 bpy)](PF6)2, [MV-CO2H](PF6)2, and PTZ-CO2H. In these assemblies, sep. waves are obsd. for the different redox couples at potentials near those found for surfaces contg. only a single component. Emission decay of the metal-to-ligand charge transfer (MLCT)excited state of [Ru(bpy)2(4,4'-(CO2H)2bpy)](PF6)2 attached to the glass backings of **metal oxide** electrodes or to glass slides was found to be nonexponential with av. lifetimes that varied from < 5 to 550 ns with CH2Cl2 in the external soln. The data could be satisfactorily fit to the Williams-Watts (Kohlrausch) distribution function. Studies at varying surface coverages revealed that the av. lifetime of emission decay (.ltbbrac..tau..rtbbrac.) depends on the extent of surface coverage and increases as surface coverage decreases. There is evidence for excited state-ground state interactions by a red-shift in the emission max. as the extent of surface coverage is increased. Emission decay remains nonexponential even on surfaces that are lightly covered. The emission was almost completely quenched on the semiconductor surfaces, with .ltbbrac..tau..rtbbrac. < 5 ns. The bound Ru(II) **emitters** on glass were quenched by electron or energy transfer to the coattached quenchers [MV-CO2H](PF6)2, PTZ-CO2H, or [Os(bpy)2(4,4'-(CO2H)2bpy)](PF6)2, suggesting that lateral electron and energy transfer can occur across the surface. Surface lifetime quenching also occurred in the presence of added 10-methyl-10-phenothiazine in the external CH2Cl2 soln. The kinetics of lifetime quenching did not follow Stern-Volmer kinetics but could be fit to a model in which there are both quenchable and unquenchable sites on the same surface.

IT Electrodes
(**metal oxide**, mol.-level electron transfer and excited state assemblies on surfaces of)

IT Energy transfer
Kinetics of photolysis
Redox reaction
(of ruthenium complexes on **metal oxide** surfaces, electron transfer in)

IT Luminescence
Ultraviolet and visible spectra
(of ruthenium complexes on **metal oxide** surfaces, for mol.-level assemblies with well defined redox properties)

IT Photochemistry
(photophysics and, of ruthenium complexes on **metal oxide** surfaces, electron transfer in)

IT Adsorbed substances
(monolayer, of ruthenium complexes on **metal oxide** surfaces, electron transfer in)

IT Electron exchange and Charge transfer
(photochem., of ruthenium complex mol. assemblies on **metal oxide** surfaces)

IT Raman spectra
(resonance, of ruthenium complexes on **metal oxide** surfaces, electron transfer in)
IT 18282-10-5, Tin dioxide
RL: USES (Uses)
(antimony-doped, mol.-level electron transfer and excited state assemblies on surfaces of)
IT 7440-31-5, Tin, uses
RL: USES (Uses)
(indium oxide electrode doped with, mol.-level electron transfer and excited state assemblies on surfaces of)
IT 1207-72-3, 10-Methylphenothiazine
RL: USES (Uses)
(luminescence quenching of ruthenium complexes by, on **metal oxide** surfaces)
IT 7631-86-9, Silica, uses **13463-67-7**, Titanium dioxide, uses
RL: USES (Uses)
(mol.-level electron transfer and excited state assemblies on surfaces of)
IT 362-03-8, 10H-Phenothiazine-10-propanoic acid 62207-96-9 68264-89-1 92984-72-0 145205-16-9 157473-46-6 157473-47-7
RL: USES (Uses)
(surface attachment and photophys. properties of, as mol.-level assemblies with well defined redox properties)
IT 7440-36-0, Antimony, uses
RL: USES (Uses)
(tin dioxide electrode doped with, mol.-level electron transfer and excited state assemblies on surfaces of)
IT 1312-43-2, Indium oxide (In2O3)
RL: USES (Uses)
(tin-doped, mol.-level electron transfer and excited state assemblies on surfaces of)

L29 ANSWER 14 OF 25 HCAPLUS COPYRIGHT 2002 ACS
AN 1993:615789 HCAPLUS
DN 119:215789
TI Insulating channel dielectric-base transistor
IN Tamura, Yasutaka
PA Fujitsu Ltd, Japan
SO Jpn. Kokai Tokkyo Koho, 8 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 05198854	A2	19930806	JP 1992-9026	19920122

AB The transistor comprises a base region having a high dielec. const., an **emitter** electrode on 1 side of the base region through a 1st barrier layer having a dielec. const. lower than that of the base region, an collector electrode through a 2nd barrier layer of the same type, and a base electrode on the other side through a 3rd barrier layer with height and thickness to prevent carrier tunneling. The 3rd barrier layer may have the dielec. const. higher than those of the 1st and 2nd barrier layers. The transistor may comprise an insulating substrate successively covered with the dielec. base region layer, the 3rd barrier layer and the base electrode. The base electrode may be made of an impurity-doped or quasi-stoichiometric base region material. The **emitter**, collector, and/or base electrode may consist of **metal** or

oxide superconductor. The base region may consist of oxide contg. Sr, Ti, K, Ta, Sn, Zr, or Nb. The base region may consist of KTa1-xNbxO3, having controlled temp. of the max. dielec. const. with the Nb content.

IT Transistors
(dielec.-base, with tunneling barrier layer)

IT Electric insulators and Dielectrics
(transistor base from)

IT 7631-86-9, Silica, uses 12003-86-0, Aluminum yttrium oxide (AlYO3) **13463-67-7**, Titanium dioxide, uses
RL: USES (Uses)
(dielec.-base transistor carrier tunneling barrier layer)

IT 7440-25-7, Tantalum, uses 107539-20-8, Barium copper yttrium oxide
RL: USES (Uses)
(dielec.-base transistor electrode)

IT 7440-03-1, Niobium, uses
RL: USES (Uses)
(strontium titanate doped with, for dielec.-base transistor electrode)

IT 12060-59-2, Strontium titanium oxide (SrTiO3) 12710-39-3, Niobium potassium tantalum oxide
RL: USES (Uses)
(transistor dielec.-base from, with carrier tunneling barrier layer)

L29 ANSWER 15 OF 25 HCAPLUS COPYRIGHT 2002 ACS
AN 1991:473866 HCAPLUS
DN 115:73866
TI Antibacterial, deodorant, far-IR-radiating antistatic paper
IN Yoshizawa, Noriyasu
PA Ain Corp., Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 9 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 03069695	A2	19910326	JP 1989-222914	19890831
PRAI	JP 1989-114104		19890509		

AB The title paper and paperboard are manufd. by coating paper base with a ceramic compn. contg. far-IR-radiating and antistatic **metal oxide** binders, synthetic polymers, and antibacterial and gas-scavenging inorg. fillers. Typical **metal oxides** are SiO2, Al **oxide**, and TiO2; synthetic polymers are modified polypropylenes; and antibacterial and gas-scavenging fillers contain metal ions e.g. Cu and Ag ions and zeolites, etc.

IT Paper
(antibacterial, antistatic, deodoring and far-IR-emitting ceramics coatings on)

IT Oxides, uses and miscellaneous
Zeolites, uses and miscellaneous
RL: USES (Uses)
(ceramic coatings contg., on paper, for antibacterial, antistatic, deodoring and far IR-emitting properties)

IT Bactericides, Disinfectants, and Antiseptics
(in ceramic coatings on paper, heavy metal ions as)

IT Antistatic agents
(in ceramic coatings on paper, **metal oxides** as)

IT Deodorants
(in ceramic coatings on paper, zeolites as)

IT Binding materials

(inorg. compds., in ceramic coatings on paper, **metal oxides** as)
IT Coating materials
(ceramic, on paper, contg. far IR **emitters**, binders, antistatic and antibacterial agents and deodorants)
IT 14701-21-4, Silver ion, uses and miscellaneous 15158-11-9, uses and miscellaneous
RL: USES (Uses)
(ceramic coatings contg., on paper bearing antibacterial, antistatic, deodoring and far IR-emitting properties)
IT 1344-28-1, Aluminum oxide, uses and miscellaneous 7631-86-9, Silicon oxide, uses and miscellaneous 9003-07-0D, Polypropylene, derivs. **13463-67-7**, Titanium oxide, uses and miscellaneous
RL: USES (Uses)
(ceramic coatings contg., on paper, for antibacterial, antistatic, deodoring and far IR-emitting properties)

L29 ANSWER 16 OF 25 HCAPLUS COPYRIGHT 2002 ACS
AN 1991:473844 HCAPLUS
DN 115:73844
TI Antibacterial, antistatic, deodoring and far-IR-emitting coatings on wood
IN Yoshizawa, Noriyasu
PA Ain Corp., Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 9 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 03073304	A2	19910328	JP 1989-222918	19890831
PRAI JP 1989-114108		19890509		

AB The title coatings comprise far-IR-emitting and antistatic **metal oxide** binders, e.g. SiO2, Al2O3, and TiO2; synthetic polymer binders, e.g. modified polypropylene; and antibacterial and gas-scavenging inorg. fillers, e.g. from Cu and Ag ions and zeolites.
IT Wood
(antibacterial and antistatic and deodorizing and far-IR-emitting ceramic coatings on)
IT Oxides, uses and miscellaneous
Zeolites, uses and miscellaneous
RL: USES (Uses)
(ceramic coatings contg., on wood, for antibacterial, antistatic, deodorizing and far IR-emitting properties)
IT Bactericides, Disinfectants, and Antiseptics
(in ceramic coatings on wood, heavy metal ions as)
IT Antistatic agents
(in ceramic coatings on wood, **metal oxides** as)
IT Deodorants
(in ceramic coatings on wood, zeolites as)
IT Binding materials
(inorg. compds., in ceramic coatings on wood, **metal oxides** as)
IT Coating materials
(ceramic, on wood, contg. far IR **emitters**, binders, antistatic and antibacterial compns. and deodorants)
IT Ceramic materials and wares
(coatings, on wood, contg. far IR **emitters**, binders, antistatic and antibacterial compns. and deodorants)

IT 1344-28-1, Aluminum oxide, uses and miscellaneous 7631-86-9, Silicon oxide, uses and miscellaneous 9003-07-0D, Polypropylene, derivs. **13463-67-7**, Titanium oxide, uses and miscellaneous 14701-21-4, Silver ion, uses and miscellaneous 15158-11-9, uses and miscellaneous
RL: USES (Uses)
(ceramic coatings contg., on wood, for antibacterial, antistatic, deodorizing and far IR-emitting properties)

L29 ANSWER 17 OF 25 HCAPLUS COPYRIGHT 2002 ACS
AN 1991:446341 HCAPLUS
DN 115:46341
TI Manufacture of tobacco filters with deodorizing, antibiotic, far-infrared radiation and antistatic properties
IN Yoshizawa, Noryasu
PA Ain Corp., Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 9 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 03083571	A2	19910409	JP 1989-220477	19890829

AB The filter can be made by coating a filter which consists of various fibers, with a ceramic coating agent which consists of: (1) adhesive, far-IR irradg. and antistatic **metal oxide** (e.g. SiO2, Al2O3, TiO2) (2) adhesive resin (e.g. modified polypropylene), and (3) antibiotic, gas-absorbing, and gas-decompg. inorg. filler (e.g. metal ion, zeolite). The coating can be done by spraying, dipping, rolling, etc. Thus, a coating agent powder consisting of SiO2 (as adhesive and far-IR irradg. agent) , Al2O3 (as adhesive and antistatic agent), TiO2 (as adhesive and deodorizing agent, modified polypropylene (As adhesive), Cu ion or Ag+ (as antibiotic and gas-decompg. agent), zeolite (Ca.cntdot.2Al2O3.cntdot.5SiO2; as gas-absorbent) was dissolved in alc. and sprayed to acetate fiber filter (diagram of app. for coating is given), the antibiotic and deodorizing effects were demonstrated.

IT Zeolites, biological studies
RL: BIOL (Biological study)
(as smoke absorbent in manuf. of cigarette filter)

IT Tobacco smoke and smoking
(filters for, antimicrobial and far-IR irradg. materials in)

IT Antistatic agents
Deodorants
(tobacco filter manuf. with)

IT Coating materials
(ceramic, tobacco filter manuf. with)

IT Ceramic materials and wares
(coatings, tobacco filter manuf. with)

IT Infrared radiation
(far-, **emitters** of, in manuf. of cigarette filter)

IT 7440-22-4, Silver, biological studies
RL: BIOL (Biological study)
(as antibiotic and gas-decompg. agent in manuf. of cigarette filter)

IT 1344-28-1, Aluminum oxide, biological studies 7631-86-9, Silicon dioxide, biological studies **13463-67-7**, Titanium oxide, biological studies
RL: BIOL (Biological study)
(tobacco filter contg.)

IT 7440-50-8, Copper, biological studies 9003-07-0, Polypropylene

RL: BIOL (Biological study)
(tobacco filter manuf. with)
IT 1335-30-4
RL: BIOL (Biological study)
(zeolites, as smoke absorbent in manuf. of cigarette filter)

L29 ANSWER 18 OF 25 HCAPLUS COPYRIGHT 2002 ACS
AN 1991:220251 HCAPLUS
DN 114:220251
TI Use of phosphate fluxes for the preparation of homogeneous x-ray **emitters**
AU Karmanov, V. I.; Slobodyanik, N. S.; Nagornyi, P. G.; Ryabushko, O. P.
CS E. O. Paton Inst. Electr. Welding, Kiev, USSR
SO Zh. Anal. Khim. (1991), 46(1), 121-6
CODEN: ZAKHA8; ISSN: 0044-4502
DT Journal
LA Russian
AB Potassium and sodium tetraborates have been commonly used as fluxes in sample prepn. for x-ray fluorescence anal. Because of the low soly. this method can not be successfully applied to the detn. of polyvalent **metal oxides**. Phosphate flux is suggested and studied in this paper for prepg. homogeneous glassy x-ray **emitters** of polyvalent **metal oxides**. As an example, the method was used for the prepn. of synthetic ref. samples for x-ray fluorescence detn. of Al2O3, Fe2O3, SiO2, TiO2, and ZrO2 in rutile samples. The mixts. of NaPO3 and Na4P2O7 with different ratios were tested for obtaining best soly. of rutile. Three industrial rutile samples were analyzed. The results compared well with those of chem. anal.
IT Fluxes
(phosphates, for polyvalent metal detn. by x-ray fluorescence)
IT X-ray analysis
(fluorescence, polyvalent metal detn. by, phosphate flux in)
IT 7429-90-5, Aluminum oxide, analysis 7439-89-6, Iron oxide (Fe2O3), analysis 7440-21-3, Silicon dioxide, analysis 7440-32-6, Titanium dioxide, analysis 7440-67-7, Zirconium dioxide, analysis
RL: ANT (Analyte); ANST (Analytical study)
(detn. of, in rutile by x-ray fluorescence using phosphate flux)
IT 7722-88-5, Tetrasodium pyrophosphate 10361-03-2, Monosodium phosphate
RL: ANST (Analytical study)
(in flux for polyvalent **metal oxide** detn. by x-ray fluorescence)
IT **1317-80-2**, Rutile
RL: ANST (Analytical study)
(polyvalent metal detn. in, by x-ray fluorescence using phosphate flux)

L29 ANSWER 19 OF 25 HCAPLUS COPYRIGHT 2002 ACS
AN 1991:8335 HCAPLUS
DN 114:8335
TI Coated metal plate with good workability and far-IR emission properties
IN Yamazaki, Takao; Kanai, Hiroshi; Oka, Joji
PA Nippon Steel Corp., Japan
SO Jpn. Kokai Tokkyo Koho, 6 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 02022480	A2	19900125	JP 1988-171817	19880712

AB The title plate is formed by adhering an org. polymer film contg. 5-95% far-IR **emitter** to a metal plate. A typical far-IR **emitter** was obtained by sintering a mixt. of MnO2 50, Fe2O3 20, CuO 10, CoO 10, and ZrO2 10% at 1200.degree.. A polyethylene film contg. 60% far-IR **emitter** was adhered on a tinplate using a polymer adhesive by hot pressing at 180.degree..

IT Coating materials
(far-IR **emitter**-contg., for tinplates, with good workability)

IT Infrared sources
(far-, **metal oxides**, coatings contg., on tinplate)

IT 9002-88-4, Polyethylene
RL: TEM (Technical or engineered material use); USES (Uses)
(coatings, contg. far-IR **emitters**, for tinplate)

IT 1304-28-5, Barium oxide, uses and miscellaneous 1305-78-8, Calcium oxide, uses and miscellaneous 1307-96-6, Cobalt oxide (CoO), uses and miscellaneous 1308-38-9, Chromium oxide (Cr2O3), uses and miscellaneous 1309-37-1, Ferric oxide, uses and miscellaneous 1309-48-4, Magnesium oxide (MgO), uses and miscellaneous 1313-13-9, Manganese dioxide, uses and miscellaneous 1313-99-1, Nickel oxide, uses and miscellaneous 1314-23-4, Zirconium oxide, uses and miscellaneous 1317-38-0, Cupric oxide, uses and miscellaneous 1344-28-1, Aluminum oxide, uses and miscellaneous 7631-86-9, Silica, uses and miscellaneous 12057-24-8, Lithium oxide, uses and miscellaneous **13463-67-7**, Titania, uses and miscellaneous
RL: USES (Uses)
(far-IR **emitters** contg., in polymeric coatings, on tinplate with good workability)

L29 ANSWER 20 OF 25 HCAPLUS COPYRIGHT 2002 ACS
AN 1988:612889 HCAPLUS
DN 109:212889
TI An efficient and durable aluminum or aluminum alloy far-IR radiator
IN Ishida, Shinichi; Yamada, Kikuo
PA Nippon Aluminium Mfg. Co., Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 6 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 63145797	A2	19880617	JP 1986-292121	19861208

AB The radiator comprises an anodic oxide film including far-IR emitting materials. Optionally, the far-IR emitting material may comprise C, or an oxide of Fe, Cr, Ni, Co, Ti, Sn, Ag, Pb, Au, Mg, Mn, Zn, etc. The radiator is useful as a heating component.

IT Heating systems and Heaters
(aluminum far-IR **emitters**)

IT Transition **metal oxides**
RL: USES (Uses)
(far-IR radiators from anodized aluminum with)

IT Infrared sources
(far-, anodized aluminum)

IT 7429-90-5, Aluminum, uses and miscellaneous 11121-92-9
RL: USES (Uses)
(far-IR radiators from anodized)

IT 1309-48-4, Magnesium oxide, uses and miscellaneous 1314-13-2, Zinc oxide, uses and miscellaneous 1332-29-2, Tin oxide 1332-37-2, Iron oxide (unspecified), uses and miscellaneous 1335-25-7, Lead oxide

L29 ANSWER 22 OF 25 HCAPLUS COPYRIGHT 2002 ACS
AN 1985:493358 HCAPLUS
DN 103:93358
TI X-ray photoelectron diffraction (XPED) studies on **metal oxide** surfaces. (I). Analysis of the XPED patterns from titanium dioxide (001) and .alpha.-aluminum oxide (0001) by the single scattering calculation
AU Tamura, Koji; Owari, Masanori; Kudo, Masahiro; Nihei, Yoshimasa
CS Inst. Ind. Sci., Univ. Tokyo, Tokyo, 106, Japan
SO Bull. Chem. Soc. Jpn. (1985), 58(7), 1873-8
CODEN: BCSJA8; ISSN: 0009-2673
DT Journal
LA English
AB X-ray photoelectron diffraction (XPED) measurements were applied to the (001) surface of TiO2 rutile and the (0001) surface of .alpha.-Al2O3 to examine the applicability of XPED to **metal oxides**.
Obtained XPED patterns were compared with the results of theor. calcns. based on a single scattering model. The calcd. patterns from both oxides agreed with the exptl. patterns. The 4 O atoms in the unit cell of TiO2 make different contributions to the XPED pattern which reflects different at. environments. The same calcn. was also made on Ti in TiO2, and on Al and O in Al2O3. This clarified the contributions of nonequivalent sites of **emitter** atoms to the main peaks in the exptl. XPED patterns.
In comparison with the crystal structures, some peaks could be attributed to some specific **emitters** or specific **emitter** -scatterer pairs.
IT Surface structure

(detn. of, of **metal oxides**, x-ray photoelectron diffraction in)
IT Photoelectric emission
(x-ray, in surface structure detn.)
IT 7782-44-7, properties
RL: PRP (Properties)
(coordination of, in alumina and titania crystals, x-ray photoelectron diffraction in detn. of)
IT 1344-28-1, properties **13463-67-7**, properties
RL: PRP (Properties)
(surface structure detn. of, x-ray photoelectron diffractometry in)

L29 ANSWER 23 OF 25 HCAPLUS COPYRIGHT 2002 ACS
AN 1978:92160 HCAPLUS
DN 88:92160
TI Thermionic converter performance with oxide collectors
AU Lieb, D.; Goodale, D.; Briere, T.; Balestra, C.
CS Thermo Electron Corp., Waltham, Mass., USA
SO Proc. - Intersoc. Energy Convers. Eng. Conf. (1977), 12, Vol. 2, 1555-62
CODEN: PIECDE
DT Journal
LA English
AB Thermionic converters using various **metal-oxide** collector surfaces were fabricated and tested. Work function and power output data are presented and evaluated. Oxides of Ba, Sr, Zn, W, and Ti were incorporated into a variable-spacing converter. W oxide gave the highest converter performance and simultaneously furnished O for the **emitter**. Oxygenated **emitters** operate at reduced Cs pressure with an increase in electrode spacing. Cs penetration of the W-oxide layer was detd. with possible formation of a Cs tungstate bronze. Ti oxide showed high performance but did not furnish O for the **emitter**. SrO in the form of a sprayed layer dissocd. in the presence of Cs. Sprayed coatings of BaO and ZnO produced collector work functions of .apprx.1.3 eV but had excessive series resistance. LaB6 in combination with O introduced through a Ag tube and Cs produced a low-work-function collector and better than av. performance.
IT Work function
(of oxide collectors, thermionic-converter performance and)
IT Thermionic energy converters
(with oxide collectors, performance of)
IT 1304-28-5, properties 1314-11-0, properties 1314-13-2, properties
1314-35-8, properties 12008-21-8 **13463-67-7**, properties
RL: PRP (Properties)
(thermionic converter with collector surfaces of, properties of)

L29 ANSWER 24 OF 25 HCAPLUS COPYRIGHT 2002 ACS
AN 1973:10091 HCAPLUS
DN 78:10091
TI Applying a multilayer antireflection coating to a substrate
IN Louderback, Anthony W.; Zook, Morris A., Jr.
SO U.S., 7 pp. Division of U. S. 3,604,784 (CA 75; 146130n).
CODEN: USXXAM
DT Patent
LA English
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 3695910	A	19721003	US 1970-50010	19700528

AB A non-absorbing colorless, multilayer antireflective coating is deposited

on a substrate having light reflecting properties by placing the substrate in a vacuum chamber contg. coating materials of **metal oxides** and **metal** fluorides a source of O and an electron beam **emitter** to effect evapn. of the materials. The chamber is evacuated to .ltoreq.3 .times. 10-5 torr, 1st layer of **metal oxide** is evapd. on the substrate then a mixt. of 2 **metal oxides** is evapd. on the 1st layer. A source of O is directed at the electron beam during evapn. of the 2nd layer to increase the pressure to a max. of 2.5 .times. 10-4 torr then a metal fluoride is evapd. on the 2nd layer. For example the substrates was placed in a holding device, coating materials were placed in receptacles and the system was evacuated to 3 .times. 10-5 torr. The substrate was heated to 500.degree.F. Fused Al2O3 (60 mesh) was evapd. to give a 1st layer. The middle layer was deposited from a mixt. of elec. fused Al2O3 and a powd. mixt. of TiO, Ti2O3, and TiO2. The final layer of MgF2 was deposited with an electron beam at 3 .times. 10-5 torr.

IT Fluorides, uses and miscellaneous
Oxides, uses and miscellaneous
RL: USES (Uses)
(in antireflection coating)

IT Electron beam, chemical and physical effects
(in multilayer antireflection coating of substrates)

IT Coating process
(multilayer antireflection substrate application)

IT 7782-44-7, uses and miscellaneous
RL: USES (Uses)
(in antireflection coatiing application)

IT 1344-28-1, uses and miscellaneous **1344-54-3**
RL: USES (Uses)
(in antireflection multilayer coating of substrates)

IT 7783-40-6 **12137-20-1 13463-67-7**, uses and miscellaneous
RL: PRP (Properties)
(in antireflection multilayer coating of substrates)

L29 ANSWER 25 OF 25 HCAPLUS COPYRIGHT 2002 ACS
AN 1967:495140 HCAPLUS
DN 67:95140
TI Narrow-band **emitter** devices
IN Schmidlin, Frederick W.
PA GTC Corp.
SO U.S., 10 pp.
CODEN: USXXAM
DT Patent
LA English
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI US 3310685		19670321	US	19630503

AB These tunnel emission cathodes and tunnel-emission amplifiers have narrow band **emitters** with low noise. In the tunnel cathode a high emission efficiency is achieved with an **emitter** material such as an n-type semiconductor of TiO, Ti2O3, or VO3 with a conduction band contg. electrons whose spread and energies extend over a narrow range. The **emitter** material is bonded to 1 side of a thin dielec. material such as polymd. siloxane which serves as the tunnel barrier. To the opposite side of the siloxane is bonded a thin metal layer which serves as the base. The exposed surface of the base may be treated to lower the vacuum work function. In the tunnel emission amplifier, the

heavily doped n-type semiconductor, the **dielec**., and the **metal** are bonded as in the tunnel cathode. Then a layer of an intrinsic semiconductor or a dielec. materials is bonded on the opposite side of the base to serve as the sluice. On the opposite side of the sluice a metal layer is bonded to serve as a collector. The sluice can be doped to warp its conduction band to obtain an improved transmission efficiency. These devices are operated with **emitter**-base voltages just large enough to raise the narrow band of electrons in the **emitter** to an energy level slightly above that required for an electron to surmount the base-vacuum or base-sluice work function. The amt. of scattering of the tunneled electrons is min. and the emission efficiency is a max.

IT Siloxanes, uses and miscellaneous
RL: USES (Uses)
(electron-tunnel emission amplifiers and cathodes contg.)

IT Electron emission
(tunnel, amplifiers and cathodes based on narrow-band)

IT Cathodes
(tunnel-emission, oxide)

IT Electric amplifiers
(tunnel-emission, solid-state narrow-band)

IT Potential barriers
(tunneling through, in **emitter** devices)

IT 1314-34-7 **1344-54-3 12137-20-1**
RL: USES (Uses)
(electron-tunnel emission amplifiers and cathodes contg.)

L49 ANSWER 1 OF 11 HCAPLUS COPYRIGHT 2002 ACS
AN 2001:452643 HCAPLUS
DN 135:54624
TI Electron-emitting material with low evaporation during discharge and resistant to ion sputtering and its electrode and electric discharge tube
IN Takahashi, Makoto; Hamada, Munemitsu; Matsuoka, Hiroshi; Takeishi, Akira; Yodokawa, Masatada
PA TDK Corporation, Japan
SO Jpn. Kokai Tokkyo Koho, 9 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 2001167687	A2	20010622	JP 1999-346967	19991206

AB An electron-emitting material contains a 1st metal component selected from Ba, Sr and/or Ca and a 2nd metal component selected from Ta, Zr, Nb, Ti and/or Hf; when the 1st and the 2nd components are shown as MI and MII, resp., the material contains a mixed oxide involving MI5MII4O15-type crystal as the base component. The material may contain a metal M (M .gtoreq.1 selected from Mg, Sc, Y, lanthanoid, V, Cr, Mo, W, Fe, Ni, Al). Preferably, the material contains .gtoreq.1 of a crystal type shown as MI4MII2O9, MIMII2O6, MI6MIIMII4O18, MI7MII6O22, and MIMIIO3. The elec. discharge tube assembled with an electrode of the material has suppressed blackening on the tube wall and hence has long service life.
IT Cathodes
Electric discharge devices
(electron-emitting material with low evapn. during discharge and resistant to ion sputtering and its electrode and elec. discharge tube)
IT 345232-64-6P, Barium tantalum zirconium oxide (Ba5Ta3.92Zr0.08O15)
345232-66-8P, Barium tantalum zirconium oxide (Ba5Ta3.8Zr0.2O15)
345232-67-9P, Barium tantalum zirconium oxide (Ba5Ta3.6Zr0.4O15)
345232-68-0P, Barium tantalum zirconium oxide (Ba5Ta2.8Zr1.2O15)
345232-69-1P, Barium tantalum zirconium oxide (Ba5Ta2Zr2O15)
345232-70-4P, Barium tantalum zirconium oxide (Ba5Ta1.2Zr2.8O15)
345232-71-5P, Barium tantalum zirconium oxide (Ba5Ta0.4Zr3.6O15)
345232-72-6P, Barium hafnium tantalum oxide (Ba5Hf2Ta2O15) 345232-73-7P, Barium niobium zirconium oxide (Ba5Nb2Zr2O15) 345232-74-8P, Barium hafnium zirconium oxide (Ba5Hf2Zr2O15) 345232-75-9P, Barium hafnium niobium oxide (Ba5Hf2Nb2O15) 345232-76-0P, Barium hafnium **titanium oxide** (Ba5Hf2Ti2O15) 345232-77-1P, Barium niobium tantalum zirconium oxide (Ba5Nb1.2Ta1.6Zr1.2O15) 345232-78-2P, Barium tantalum **titanium** zirconium **oxide** (Ba5Ta1.6Ti1.2Zr1.2O15) 345232-79-3P, Barium hafnium tantalum zirconium oxide (Ba5Hf1.2Ta1.6Zr1.2O15) 345232-80-6P, Barium hafnium niobium tantalum oxide (Ba5Hf1.2Nb1.2Ta1.6O15) 345232-81-7P, Barium hafnium tantalum **titanium oxide** (Ba5Hf1.2Ta1.6Ti1.2O15)
345232-82-8P, Barium niobium **titanium** zirconium **oxide** (Ba5Nb1.2Ti1.2Zr1.6O15) 345232-83-9P, Barium hafnium niobium zirconium oxide (Ba5Hf1.2Nb1.2Zr1.6O15) 345232-84-0P, Barium hafnium **titanium** zirconium **oxide** (Ba5Hf1.2Ti1.2Zr1.6O15)
345232-85-1P, Barium hafnium niobium **titanium oxide** (Ba5Hf1.2Nb1.6Ti1.2O15) 345232-86-2P

L49 ANSWER 2 OF 11 HCAPLUS COPYRIGHT 2002 ACS
AN 1999:165906 HCAPLUS
DN 130:290017

TI Photoelectric work functions of **metal oxide** **films** and emission characteristics of molybdenum **emitter** tips with oxide coatings
AU Bernhard, J. M.; Rouse, A.; Sosa, E. D.; Golden, D. E.; Chalamala, B. R.; Aggarwal, S.; Gnade, B. E.; Ramesh, R.
CS Department of Physics, University of North Texas, Denton, TX, 76203, USA
SO Int. Vac. Microelectron. Conf., 11th (1998), 32-33 Publisher: Institute of Electrical and Electronics Engineers, New York, N. Y.
CODEN: 67IYAX
DT Conference
LA English
AB UV photoelectron spectroscopic studies were made of Mo oxide, La Sr Co oxide, PZT, and Pb Nb Ti Zr oxide. The field emission was studied. The work functions are given.
IT Dielectric films
Work function
(field emission and work function of oxide films on molybdenum **emitter** tips)
IT Oxides (inorganic), processes
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(field emission and work function of oxide films on molybdenum **emitter** tips)

L49 ANSWER 3 OF 11 HCAPLUS COPYRIGHT 2002 ACS
AN 1999:134892 HCAPLUS
DN 130:275033
TI Optoelectronic properties controlled by an electric field in thin films
AU Olesik, J.; Calusinski, B.; Olesik, Z.
CS Inst. Physics, Pedagogical Univ., Czestochowa, 42-201, Pol.
SO Electron Technol. (1998), 31(3/4), 425-428
CODEN: ETNTAT; ISSN: 0070-9816
PB Institute of Electron Technology
DT Journal
LA English
AB Electron emission properties of semiconducting **films** (In2O3:Sn) and **metallic films** (Ti) of thickness 10-100 nm were studied. The films were deposited by reactive ion sputtering on a glass substrate of thickness 0.2 mm. The opposite side of the substrate (with a field electrode evapd. onto it) was biased by neg. voltage. This created transverse elec. field which favored electron emission into the vacuum. The study was performed in the vacuum of the order 10-8 hPa. Electron emission yield dependence on the intensity of an internal field and illumination were measured. The emission yield for semiconducting films depends exponentially on field intensity. The field influence on photoemission was also found. For **metallic films** the field effect on emission phenomena is significantly smaller. Measurements of electrons energy in field induced emission for both types of studied **emitters** showed that .apprx.80% of electrons have energy up to 10 eV but some electrons (a few percent) of energy .apprx.50 eV are also detected.
IT Photoelectron spectrometers
(for measuring optoelectronic properties controlled by elec. field in thin films)
IT Metals, properties
RL: PEP (Physical, engineering or chemical process); PRP (Properties); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
IT Ion beam sputtering
Sputter deposition
(to evap. thin **films** of a semiconductor and **metal**

onto glass substrates)
IT 7440-32-6, Titanium, properties 50926-11-9, Indium tin oxide
RL: PEP (Physical, engineering or chemical process); PRP (Properties); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(optoelectronic properties controlled by elec. field in thin films of)
RE.CNT 8 THERE ARE 8 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L49 ANSWER 4 OF 11 HCAPLUS COPYRIGHT 2002 ACS
AN 1998:739386 HCAPLUS
DN 130:45059
TI Cold cathode fluorescent lamps
IN Hirohashi, Masaki; Kuwata, Atsushi
PA Matsushita Electric Industrial Co., Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 7 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 10302714	A2	19981113	JP 1997-106989	19970424

AB An electron-**emitter** coated on the cold cathode in the lamps suitable for use in backlights comprises .gtoreq.1 oxygen-deficient **metal oxide**, A1aA2bA3cB1dB2eB3fB4gB5hOz, where A1 = Ce; A2 = Y, La, Pr, Nd, Pm, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb, Lu; A3 = Ca, Sr, Ba; B1 = Cu; B2 = Cr, Mn, Fe, Co, Ni; B3 = Ti, Zr, Ru, Rh, Hf, Os, Ir; B4 = V, Nb, Ta; B5 = Mo, W; and 4a+3b+2c+2d+3e+4f+5g+6h > 2z.
IT 216577-19-4, Lanthanum manganese strontium oxide (La0.8Mn0.9Sr0.2O2.9)
216577-21-8, Calcium manganese yttrium oxide (Ca0.1MnY0.9O2.7)
216577-22-9 216577-23-0, Ruthenium strontium yttrium oxide (Ru0.2SrY0.8O2.9)
RL: DEV (Device component use); USES (Uses)
(cold cathode fluorescent lamps)

L49 ANSWER 5 OF 11 HCAPLUS COPYRIGHT 2002 ACS
AN 1998:479005 HCAPLUS
DN 129:128782
TI Selective infrared line **emitters**
IN Chen, Zheng; Rose, Millard Franklin; Adair, Peter L.
PA Auburn University, USA
SO U.S., 7 pp.
CODEN: USXXAM
DT Patent
LA English
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 5780370	A	19980714	US 1996-699509	19960819

AB Selective IR line **emitter** comprising a non-woven composite of fibers of .gtoreq.1 rare earth **metal oxide** and .gtoreq.1 structure-forming material selected from the group consisting of alumina, silica, yttrium oxide, and zirconium **oxide**, where the rare earth **metal oxide** fibers are dispersed and interlocked in a network of the structure forming fibers, and where the fibers are adhesively connected at a multiplicity of crossing points by a ceramic bonding agent. The bonding agent may be a ceramic compd. formed by a sol-gel process. The articles exhibit narrow bandwidth emissions with good thermal conversion efficiencies and with improved tensile

strength and lower brittleness than in the absence of the ceramic bonding agent. Application to heating systems is indicated.

IT Ceramic composites
IR sources
Sol-gel processing
(selective IR line **emitters** based on adhesively locked fiber composites)

IT Alumina fibers
Ceramic fibers
Silica fibers
RL: DEV (Device component use); USES (Uses)
(selective IR line **emitters** based on adhesively locked fiber composites)

IT Rare earth oxides
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(selective IR line **emitters** based on adhesively locked fiber composites)

IT Heating systems
(selective IR line **emitters** based on adhesively locked fiber composites for)

IT 1303-86-2, Boria, uses 1313-97-9, Neodymium oxide. 1314-23-4, Zirconia, uses 1314-36-9, Yttria, uses 1314-37-0, Ytterbium oxide. 1344-28-1, Alumina, uses 7631-86-9, Silica, uses 12055-62-8, Holmium oxide. 12061-16-4, Erbium oxide. 37368-09-5, **Titanium** zirconium **oxide**
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(selective IR line **emitters** based on adhesively locked fiber composites)

L49 ANSWER 6 OF 11 HCAPLUS COPYRIGHT 2002 ACS
AN 1996:294681 HCAPLUS
DN 124:330095
TI Transistors with oxide superconductor bases
IN Toda, Norihiko; Abe, Hitoshi; Makita, Takehiko
PA Oki Electric Ind Co Ltd, Japan
SO Jpn. Kokai Tokkyo Koho, 5 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 08056022	A2	19960227	JP 1994-191614	19940815

AB Transistors contain insulator substrates (e.g., SrTiO3), semiconductor regions (contg. **emitters**) formed by implantation of **metals** (e.g., Nb), **oxide** superconductor base layers (e.g., (Ba, Rb)BiO3) partially covering the semiconductor regions, and collector regions (e.g., In) formed on the superconductor layers, and having wider area than the **emitter** regions. Carriers are effectively collected by the collectors.

IT Superconductor devices
(transistors with oxide superconductor bases and doped semiconductor **emitters**)

IT Transistors
(with oxide superconductor bases and doped semiconductor **emitters**)

IT 122610-40-6, Barium bismuth rubidium oxide ((Ba,Rb)BiO3)

RL: DEV (Device component use); USES (Uses)
(transistors with oxide superconductor bases)
IT 7440-74-6, Indium, uses
RL: DEV (Device component use); USES (Uses)
(transistors with oxide superconductor bases and collectors from)
IT 7440-03-1, Niobium, uses
RL: MOA (Modifier or additive use); USES (Uses)
(transistors with oxide superconductor bases and doped semiconductor **emitters**)
IT 12060-59-2, Strontium **titanium oxide** (SrTiO3)
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(transistors with oxide superconductor bases on)

L49 ANSWER 7 OF 11 HCAPLUS COPYRIGHT 2002 ACS
AN 1995:573760 HCAPLUS
DN 122:304660
TI Transistors with superconductor base
IN Usuki, Tatsuro; Suzuki, Hiroshi; Yoshisato, Masanobu
PA Sanyo Electric Co, Japan
SO Jpn. Kokai Tokkyo Koho, 6 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 06283772	A2	19941007	JP 1993-92261	19930325

AB In fabrication of title transistor comprising a semiconductor collector region, a superconductor base region formed on the collector region, and a **emitter** region formed on the base region via an insulating **film** using superconductor or **metal**, the thickness of the epitaxial insulating film in between the collector and the base is larger than 10 .mu.m, but less than the coherence length of the base region. The transparence of the quasi-particles is increased since the barrier in the interface of the base/collector is reduced due to the insulating film formed in this method.
IT Epitaxy
Superconductor devices
Transistors
(fabrication of transistors with superconductor base)
IT 1303-11-3, Indium arsenide, uses 1309-48-4, Magnesium monoxide, uses 12795-57-2, Strontium **titanium oxide** 107539-20-8, Yttrium barium copper oxide 118145-70-3, Barium bismuth potassium oxide
RL: DEV (Device component use); USES (Uses)
(fabrication of transistors with superconductor base)

L49 ANSWER 8 OF 11 HCAPLUS COPYRIGHT 2002 ACS
AN 1995:561460 HCAPLUS
DN 122:302406
TI Light emitting device
IN Takeda, Mikiro
PA Sharp Kk, Japan
SO Jpn. Kokai Tokkyo Koho, 5 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE

PI	JP 07029682	A2	19950131	JP 1993-173341	19930713

AB The title device comprising a light emitting layer formed by a semiconductor material, is characterized in that the light emitting **layer** is interposed between **tunneling emitter layers** as an accelerating region for carriers, formed by an insulator having a thickness less than the mean free path of carriers, and a ferroelec. layer is formed on the tunneling **emitter** as a currier source.

IT Electroluminescent devices
(ferroelec. layer in electroluminescence device)

IT 12676-60-7, Lanthanum lead **titanium** zirconium **oxide** (LaPbTiZrO3)
RL: DEV (Device component use); USES (Uses)
(ferroelec. layer in electroluminescence device)

IT 1314-98-3D, Zinc sulfide (ZnS), Mn activated
RL: DEV (Device component use); USES (Uses)
(light emitting layer in electroluminescence device)

IT 12033-89-5, Silicon nitride (Si3N4), uses
RL: DEV (Device component use); USES (Uses)
(**tunneling emitter layer** in electroluminescence device)

L49 ANSWER 9 OF 11 HCAPLUS COPYRIGHT 2002 ACS
AN 1993:615790 HCAPLUS
DN 119:215790
TI Low-voltage dielectric-base transistor
IN Tamura, Yasutaka
PA Fujitsu Ltd, Japan
SO Jpn. Kokai Tokkyo Koho, 8 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

PI	JP 05198855	A2	19930806	JP 1992-9028	19920122

AB In the transistor comprising a high-dielec. const. base region, a base electrode directly or indirectly contacting with the base region, and **emitter** and collector electrodes contacting with the base region through a barrier layer having a dielec. const. lower than that of the base region, the base, **emitter**, and/or collector electrode consists of the same substance as the base region, with the surface contacting with the barrier layer or the base region, which consists of an element-substituted or -deficient substance with elec. cond. The transistor may have a carrier **tunneling** barrier **layer** between the base region and the base electrode. The **emitter** or collector electrode may consist of a (super)conductive oxide. The base region may consist of an oxide contg. Sr, Ti, Ta, K, Sn, Zr, or Nb. The base region may consist of KTa1-xNbxO3, and the base electrode may consist of KTa1-xNbxO3 with K substituted for Ca. The transistor may comprise an insulating substrate covered with a thin film of the base region.

IT Transistors
(dielec.-base, low-voltage)

IT Electric insulators and Dielectrics
(low-voltage transistor base from)

IT 1306-38-3, Cerium dioxide, uses 12003-86-0, Aluminum yttrium oxide (AlYO3)
RL: USES (Uses)

(low-voltage dielec.-base transistor carrier **tunneling** barrier **layer**)
IT 107539-20-8, Yttrium barium copper oxide
RL: USES (Uses)
(low-voltage dielec.-base transistor electrode)
IT 12060-59-2, Strontium **titanium oxide** (SrTiO3)
12710-39-3, Niobium potassium tantalum oxide
RL: USES (Uses)
(low-voltage transistor dielec. base and electrode from)
IT 7440-70-2, Calcium, uses
RL: USES (Uses)
(potassium tantalate niobate doped with, for dielec.-base transistor base electrode)
IT 7440-03-1, Niobium, uses
RL: USES (Uses)
(strontium titanate doped with, for dielec.-base transistor electrode)

L49 ANSWER 10 OF 11 HCAPLUS COPYRIGHT 2002 ACS
AN 1992:663052 HCAPLUS
DN 117:263052
TI Oxide cathode **emitter** display tubes and manufacture of oxide cathodes thereof
IN Kani, Akira; Sago, Sumuto; Iijima, Motoi; Yokoi, Tatsumasa; Kamiya, Hikonori; Asai, Hideyuki; Senda, Shinji; Kikuchi, Naoya; Matsuyama, Tatsuo
PA Noritake Co., Ltd. K. K., Japan
SO Jpn. Kokai Tokkyo Koho, 8 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 04104430	A2	19920406	JP 1990-218947	19900822
JP 2525278	B2	19960814		

AB The oxide cathode material useful in **emitter** display tubes is an elec. conductive **oxide** of **metals** from Group IA, IIA, and/or IIIA elements. The manufg. the oxide cathode materials involves (1) pulverizing the conductive oxide, (2) kneeding a mixt. contg. the pulverized oxide, a liq. vehicle, and a binder to form a conductive paste, and (3) printing a cathode pattern with the paste on a substrate. The use of the oxides provides the cathode with a decreased operating voltage and an increased emission efficiency without Ag vapor as its sealing gas.
IT Cathode-ray tubes
(elec. conductive oxide for)
IT Electric conductors
(pastes, **metal oxide** for, for cathode **emitter**)
IT 12016-86-3, Lanthanum cobalt oxide (LaCoO3) 12022-69-4, Strontium iron oxide (SrFeO3) 12031-18-4, Lanthanum nickel oxide (LaNiO3) 12031-41-3, Lanthanum nickel oxide (La2NiO4) 12035-28-8, Neodymium nickel oxide (Nd2NiO4) 12047-25-5 12053-92-8, Copper lanthanum oxide (CuLa2O4) 12143-36-1, Strontium vanadate (SrVO3) 12201-04-6, Lanthanum titanate (LaTiO3) 12313-89-2 37217-07-5, Lanthanum ruthenium oxide (La2Ru2O7) 39282-77-4, Strontium chromate (SrCrO3) 107121-69-7, Cobalt lanthanum strontium oxide (CoLa0.7Sr0.3O3) 109466-64-0, Barium copper yttrium oxide (Ba2Cu3YO6.5) 118819-36-6, Rubidium tungsten oxide (Rb0.1WO3) 144815-63-4, Sodium **titanium oxide** (Na0.1TiO2) 144856-75-7, Osmium scandium oxide (Os2Sc2O7)
RL: TEM (Technical or engineered material use); USES (Uses)

(conductive paste contg., for cathode in display tubes)

L49 ANSWER 11 OF 11 HCAPLUS COPYRIGHT 2002 ACS
AN 1967:14900 HCAPLUS
DN 66:14900
TI Tunnel emission from aluminum-aluminum **oxide metal** structures
AU Hayashi, Takeshi; Nakano, Tomoyasu
CS Matsushita Res. Inst. Tokyo Inc., Kawasaki, Japan
SO Jpn. J. Appl. Phys. (1966), 5(10), 982-3
CODEN: JJAPA5
DT Journal
LA English
AB A method of obtaining emission of electrons from cold materials by using a thin-**film tunnel** cathode in asym. diode structures is described. The diode consists of a 200-A. Al film (99.999%) on which an oxide layer is grown in O at 400.degree. for 2 hrs. A SiO film 1500 A. thick covers the edge of the active area of 1/160 cm.2 Surface **emitter** layers of Al 99.999%, Au 99.999%, Ti 99.9%, and Cr, 100-400 A. thick, are vacuum deposited on the active area. The current transfer is large with all the metals except Au. It is believed that all but the Au form a special oxide on the Al2O3 during the forming process, producing a heterojunction and increasing the tunnel effect.
IT Diodes
(**film**, aluminum-aluminum **oxide-metal**, tunnel emission in)
IT Potential barriers
(tunnel emission through, from aluminum-aluminum **oxide-metal** structures)
IT Electron emission
(tunnel, from aluminum-aluminum **oxide-metal** structures)
IT Electric current
(tunnel, in aluminum-aluminum **oxide-metal** diodes)
IT 7440-47-3, properties
RL: PRP (Properties)
(electron tunnel emission from aluminum-aluminum oxide-chromium structures)

L52 ANSWER 1 OF 37 HCAPLUS COPYRIGHT 2002 ACS
AN 2002:69555 HCAPLUS
DN 136:126657
TI Field emission displays using diamond-like carbon thin **layer cathodes** with high emission efficiency and good display images, and their manufacture
IN Kim, Steven; Yom, Gun Yong; Lee, Do Hain
PA Skion Corp., USA
SO Jpn. Kokai Tokkyo Koho, 23 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2002025426	A2	20020125	JP 2001-112194	20010411
	US 2002011770	A1	20020131	US 2000-725164	20001129
PRAI	KR 2000-36066	A	20000628		

AB The **emitter** comprises (A) a diamond-like carbon (DLC) thin layer, (B) a lower electrode layer (maybe comprise **Mo**) having a 1st hole tapered toward the DLC layer, (C) an insulator layer (maybe comprise SiO2) having a 2nd hole, which is larger than the 1st one and has a side wall rounded and tapered towards the electrode layer, above the 1st one, and (D) an upper electrode layer (maybe comprise **Mo**) having a 3rd hole smaller than the 1st one above the 1st one. The DLC layer may be deposited by Cs+ ion beam sputtering. An illustration of the emission device is given.
IT 7439-98-7, **Molybdenum**, processes
RL: CPS (Chemical process); DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(electrode layer; manuf. of field emission displays using diamond-like carbon thin **layer cathodes** with high emission efficiency and good display images)
IT 7782-44-7, Oxygen, uses 7782-50-5, Chlorine, uses
RL: NUU (Other use, unclassified); USES (Uses)
(etching gas; manuf. of field emission displays using diamond-like carbon thin **layer cathodes** with high emission efficiency and good display images)

L52 ANSWER 2 OF 37 HCAPLUS COPYRIGHT 2002 ACS
AN 2002:64135 HCAPLUS
DN 136:94700
TI Manufacturing method of amorphous carbon field **emitter** with low operating voltage
IN Lee, Nae Seong; Han, In Taek; Choi, Won Bong; Choi, Joon Hei
PA Samsung Sdi Co., Ltd., S. Korea
SO Repub. Korean Kongkae Taeho Kongbo, No pp. given
CODEN: KRXXA7
DT Patent
LA Korean
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	KR 2000009237	A	20000215	KR 1998-29511	19980722

AB A manufg. method of a field **emitter** is provided to lower operating voltage required to electron emission and present a field **emitter** having an amorphous C micro-tip. The present invention discloses a manufg. method of a field **emitter** comprising: a step

forming stripe shape cathode electrodes on substrate; a step forming an insulation **layer** on the **cathode** electrodes and the exposed substrate; a step forming a gate layer on the insulation layer; a step forming plural holes by etching from the top of the gate layer to the top of the cathode electrodes; a step forming a sepn. layer on the gate layer; a step forming micro-tips having prescribed height within the holes by using amorphous C particles; and a step removing the sepn. layer.

IT Dielectric films
Etching
Field emission cathodes
Gate contacts
(manufg. method of amorphous carbon field **emitter** with low operating voltage)

IT **7440-44-0**, Carbon, processes
RL: PEP (Physical, engineering or chemical process); PYP (Physical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(manufg. method of amorphous carbon field **emitter** with low operating voltage)

L52 ANSWER 3 OF 37 HCAPLUS COPYRIGHT 2002 ACS
AN 2002:27644 HCAPLUS
DN 136:94708
TI Cold electron-emitting devices with lowered leakage current and method for their manufacture
IN Hori, Junichi; Hiranaka, Koichi; Tottori, Satoru
PA Matsushita Electric Industrial Co., Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 8 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 2002008518	A2	20020111	JP 2000-189522	20000623

AB The device has a semiconductor layer (A), an insulation layer (B), a field emission transistor (FET) contg. a source region, a gate region, and a drain region, .gtoreq.1 **emitter**(s) (C) formed by etching the drain region or a part of A in contact with the drain region, and a low-resistivity layer (D, having a const. potential and resistivity .gtoreq.2 orders higher than that of a channel of the FET) below the source region and the gate region. The method is characterized in that a semiconductor layer below **emitter**(s) and that below a FET are formed in the same process. The low-resistivity layer may contain Ti, **Cr**, Al, **Mo**, **Ta**, Ni, Cu, Ag, Pd, W, and/or Sn or may be formed by adding Group V or Group III element to the semiconductor layer by ion implantation, plasma ion doping, or vapor phase growth method.

IT Field effect transistors
Field emission cathodes
(manuf. of cold electron-emitting devices contg. **emitters** and FET with lowered leakage current)

IT 7429-90-5, Aluminum, processes 7439-98-7, **Molybdenum**, processes 7440-02-0, Nickel, processes 7440-05-3, Palladium, processes 7440-22-4, Silver, processes 7440-25-7, **Tantalum**, processes 7440-31-5, Tin, processes 7440-32-6, Titanium, processes 7440-33-7, Tungsten, processes 7440-36-0, Antimony, processes 7440-38-2, Arsenic, processes 7440-42-8, Boron, processes 7440-47-3, **Chromium**, processes 7440-50-8, Copper, processes 7440-55-3, Gallium, processes

7440-74-6, Indium, processes 7723-14-0, Phosphorus, processes
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(low-resistivity layer; manuf. of cold electron-emitting devices contg. **emitters** and FET with lowered leakage current)

IT 7440-21-3, Silicon, processes **7440-44-0**, Carbon, processes 7440-56-4, Germanium, processes
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(semiconductor layer; manuf. of cold electron-emitting devices contg. **emitters** and FET with lowered leakage current)

L52 ANSWER 4 OF 37 HCAPLUS COPYRIGHT 2002 ACS
AN 2001:812429 HCAPLUS
DN 136:78072
TI Fabrication of electron **emitter** device using polycrystalline diamond film
AU Hatta, Akimitsu; Sumitomo, Taku; Inomoto, Hideo; Hiraki, Akio
CS Department of Electronic and Photonic Systems Engineering, Kochi University of Technology, Kochi, 782-8502, Japan
SO New Diamond and Frontier Carbon Technology (2001), 11(5), 307-312
CODEN: NDFTFF; ISSN: 1344-9931
PB Scientific Publishing Division of MYU K.K.
DT Journal
LA English
AB An electron **emitter** device using a polycryst. diamond film has been developed. The device is composed of a cathode of a polycryst. diamond film, gate electrodes of aluminum, and an insulating layer of a diamond-like carbon film. The diamond film was deposited on an n-type Si wafer by the conventional microwave plasma chem. vapor deposition (CVD) method, the diamond-like carbon film was deposited by an electron cyclotron resonance (ECR) plasma CVD method, and the aluminum electrodes were deposited by an electron beam evaporator and patterned by photolithog. The diamond-like carbon **layer** on the **cathode** was removed by oxygen plasma etching. Electron emission from the cathode to the gate electrodes was obsd. at a gate voltage of more than 30 V and the emission current was 0.5 mA at 40 V.

IT **7440-44-0**, Carbon, uses
RL: DEV (Device component use); USES (Uses)
(diamond-like; electron **emitter** device with gate electrodes of aluminum and insulating layer of diamond-like carbon film)
IT 7429-90-5, Aluminum, uses
RL: DEV (Device component use); USES (Uses)
(electron **emitter** device with gate electrodes of aluminum and insulating layer of diamond-like carbon film)
IT 7782-40-3, Diamond, properties
RL: DEV (Device component use); PRP (Properties); USES (Uses)
(fabrication of electron **emitter** device using polycryst. diamond film)
RE.CNT 11 THERE ARE 11 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L52 ANSWER 5 OF 37 HCAPLUS COPYRIGHT 2002 ACS
AN 2001:710064 HCAPLUS
DN 135:265824
TI Diamond-based cathodes having electron supply layers and showing large electron emission quantity
IN Nishibayashi, Yoshiki; Imai, Takahiro; Fujimori, Naoharu; Kitabatake,

Makoto; Watanabe, Akihiko; Yoshikawa, Masanori
PA Fine Ceramics Center, Japan; Sumitomo Electric Industries, Ltd.; Matsushita Electric Industrial Co., Ltd.
SO Jpn. Kokai Tokkyo Koho, 9 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2001266736	A2	20010928	JP 2000-85092	20000324

AB The cathodes have diamond-made **emitters** and electron supply layers formed on/in the diamond surfaces. The electron supply layers may be doped with B in high concn. The electron supply layers may be graphite or electroconductive amorphous carbon.
IT Ion implantation
(boron doping by; diamond-based cathodes having electron supply layers and showing large electron emission quantity)
IT Cathodes
(diamond-based cathodes having electron supply layers and showing large electron emission quantity)
IT **7440-44-0P**, Carbon, processes
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PNU (Preparation, unclassified); PREP (Preparation); PROC (Process); USES (Uses)
(amorphous, electroconductive, electron-supply **layers**; diamond-based **cathodes** having electron supply layers and showing large electron emission quantity)

L52 ANSWER 6 OF 37 HCAPLUS COPYRIGHT 2002 ACS
AN 2001:489832 HCAPLUS
DN 135:84429
TI Field emission device and method for fabricating the same
IN Choi, Jun-Hee; Cha, Seung-Nam; Lee, Hang-Woo
PA S. Korea
SO U.S. Pat. Appl. Publ., 12 pp.
CODEN: USXXCO
DT Patent
LA English
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2001006325	A1	20010705	US 2001-754275	20010105
EP 1115134	A1	20010711	EP 2001-300051	20010104
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
JP 2001216887	A2	20010810	JP 2001-315	20010105
PRAI KR 2000-361	A	20000105		

AB Field emission devices are described which comprise a substrate; a cathode formed over the substrate; microtips having nanosized surface features formed on the cathode; a gate insulation layer formed over the substrate with wells in each of which a single microtip is located; a gate electrode, formed on the gate insulation layer, with gates aligned with the wells so that each of the microtips is exposed through a corresponding gate; a focus gate insulation layer having openings to each of which one or more gates correspond formed on the gate electrode; and a focus gate electrode with focus gates aligned with the openings of the focus gate insulation layer formed on the focus gate insulation layer. Methods for fabricating the devices are also described which entail forming the

cathode, gate insulation **layer** with wells, and gate electrode on a substrate in sequence, and forming microtips on the cathode exposed by the wells; forming a focus gate insulation layer on the gate electrode to have a predetd. thickness with a polymer (e.g., a polyimide or photoresist) layer so that the wells having the microtips are filled; forming a focus gate electrode on the focus gate electrode; forming a predetd. photoresist pattern on the focus gate electrode; etching the focus gate electrode into a focus gate electrode pattern using the photoresist pattern as a etch mask; etching the focus gate insulation layer exposed trough the focus gate electrode pattern by plasma etching to open wells; etching the polymer layer within the wells of the gate insulation layer by plasma etching so that the polymer layer partially remains on the surface of the microtips; and etching the surface of the microtips by plasma etching using the polymer layer remaining on the microtips as an etch mask, and etching the polymer layer itself, to produce microtips with nanosized surface features. The plasma etching is preferably conducted using oxygen or an oxygen-contg. mixt.

IT Optical imaging devices
(field emission displays; field-emission devices with microtips with nanosized features and their fabrication)

IT Electronic device fabrication
Field emission cathodes
Field **emitters**
Photoresists
(field-emission devices with microtips with nanosized features and their fabrication)

L52 ANSWER 7 OF 37 HCAPLUS COPYRIGHT 2002 ACS
AN 2001:474158 HCAPLUS
DN 135:68674
TI Field emission displays of cathode arrays with carbon nanotube films as **emitter** and methods for their fabrication
IN Han, Si Wook; Kim, Sang Mun
PA LG Electronics Inc., S. Korea
SO U.S. Pat. Appl. Publ., 10 pp.
CODEN: USXXCO
DT Patent
LA English
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI US 2001004979	A1	20010628	US 2000-733952	20001212
PRAI KR 1999-57590	A	19991214		

AB Field emission displays are described which comprise a cathode array including a cathode electrode formed on a substrate; insulating layers and carbon nanotube films for use as **emitter** electrodes formed alternately on the cathode electrode; and, a gate electrode formed on the insulating layer. Methods for fabrication of the field emission displays are discussed which entail forming a cathode electrode, an insulating layer, and a gate electrode on a substrate in succession; etching the gate electrode and the insulating **layer** into a **cathode** array pattern, to form an **emitter** region; forming a sacrificial layer on the gate electrode which is not etched; depositing a carbon nanotube film on the cathode electrode in the **emitter** region, to form an **emitter**; and, etching the sacrificial layer for removing the carbon nanotube formed on the sacrificial layer, to form a cathode array. Alternative fabrication methods in which the sacrificial layer is formed on the substrate before the etching are also described.

IT 7439-98-7, **Molybdenum**, processes 7440-02-0, Nickel, processes
7440-06-4, **Platinum**, processes 7440-22-4, Silver, processes
7440-47-3, **Chromium**, processes 7440-50-8, Copper, processes
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(gate electrode; field emission displays of cathode arrays with carbon nanotube films as **emitter**, and methods for their fabrication)

IT **7440-44-0**, Carbon, processes
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(nanotubes, film; field emission displays of cathode arrays with carbon nanotube films as **emitter**, and methods for their fabrication)

L52 ANSWER 8 OF 37 HCAPLUS COPYRIGHT 2002 ACS
AN 2001:421246 HCAPLUS
DN 135:26979
TI Field emission displays having patternwise activated flat diamond cathodes and their manufacture
IN Tomokage, Hajime; Iseri, Yoichi; Kim, Ho Do; Choi, Woon
PA Foundation for Scientific Technology Promotion, Japan; Mitsumi Electric Co., Ltd
SO Jpn. Kokai Tokkyo Koho, 5 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2001160366	A2	20010612	JP 1999-343232	19991202

AB The displays comprise substrates, patternwise activated diamond **cathode layers**, and phosphor-coated transparent anode **layers** above the **cathodes**. In the manufg. process, the **cathode layers** are activated and stabilized by application of high elec. field in vacuo and then patternwise applied with concd. field by ball anodes to form patterns. The patterns are then projected on the anodes upon voltag
IT 7440-57-5, **Gold**, uses
RL: NUU (Other use, unclassified); USES (Uses)
(ball anodes; manuf. of field emission displays with patternwise-activated flat diamond cathodes)
IT 7782-40-3, Diamond, processes
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(polycryst., B-doped, **cathode layers**; manuf. of field emission displays with patternwise-activated flat diamond cathodes)
IT 7440-21-3, Silicon, uses
RL: DEV (Device component use); USES (Uses)
(substrates; manuf. of field emission displays with patternwise-activated flat diamond cathodes)

L52 ANSWER 9 OF 37 HCAPLUS COPYRIGHT 2002 ACS
AN 2001:397200 HCAPLUS
DN 134:375073
TI Cathode structure for planar **emitter** field emission displays
IN Russ, Benjamin E.
PA Sony Electronics Inc., USA
SO PCT Int. Appl., 15 pp.

CODEN: PIXXD2
DT Patent
LA English
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI WO 2001039236	A1	20010531	WO 2000-US31631	20001117

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR,

AB A cathode structure for use in field emission display (FED) devices includes 4 layers. A 1st layer consists of conducting lines supported on an insulating substrate. A 2nd layer consists of thin nonconducting lines crossing the conducting lines. A 3rd layer consists of a thick layer of nonconducting material with holes centered between the thin nonconducting lines of the 2nd layer and extending over a portion of the thin nonconducting lines. A 4th layer consists of conducting lines contg. holes of the same dimension as and aligned with the holes in the 3rd layer exposing portions of the conducting lines of the 1st layer and of the nonconducting lines of the 2nd layer. Emissive material is deposited on the exposed portions of the conducting lines of the 1st layer to produce a cathode for an FED device. The 4-**layer cathode** structure improves emission characteristics such as c.d. and uniformity for planar edge **emitters** and surface **emitters**.

IT Glass, uses
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(spin on, non-conductive line; cathode structure for planar **emitter** field emission displays)

IT 7429-90-5, Aluminum, uses 7440-47-3, **Chromium**, uses 7440-57-5, **Gold**, uses 11118-57-3, **Chromium** oxide 50926-11-9, Indium tin oxide
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(conductive line; cathode structure for planar **emitter** field emission displays)

L52 ANSWER 10 OF 37 HCAPLUS COPYRIGHT 2002 ACS
AN 2001:320245 HCAPLUS
DN 134:335437
TI Method of fabricating a field emission device with a lateral thin-film edge **emitter**
IN Karpov, Leonid D.; Eaton, Mark F.
PA Stellar Display Corp., USA
SO PCT Int. Appl., 45 pp.
CODEN: PIXXD2
DT Patent
LA English
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI WO 2001031671	A1	20010503	WO 2000-US29584	20001026

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR,

AB A novel edge **emitter** device including an anode and a cathode situated at a level above and laterally displaced from the anode, providing an opening for a window above the anode. The cathode has an emitting edge which is operable to emit field electrons when a pos. voltage is applied to the anode with respect to the cathode. On the top

surface of the anode is disposed either a phosphor layer operable to luminesce when struck with the electrons emitted from the emitting edge or a layer having a higher secondary emission ratio than anode. The device is capable of being configured as a diode, triode, tetrode, etc. having .gtoreq.1 control electrodes to control the current from emitting edge to anode. A fabrication process is capable of automatic alignment of **cathode** above insulating **layer** and around the window above anode and for the protrusion of cathode slightly beyond insulating layer into the window opening.

IT Nanotubes
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(carbon, **cathode layer**; method of fabricating a

IT 12070-14-3, Zirconium carbide
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(**Cr**-ZrC-**Cr cathode layer**; method of fabricating a field emission device with a lateral thin-film edge **emitter**)

IT 7429-90-5, Aluminum, processes 7440-47-3, Chrome, processes
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(anode layer; method of fabricating a field emission device with a lateral thin-film edge **emitter**)

IT 7782-40-3, Diamond, processes
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(**cathode layer**; method of fabricating a field emission device with a lateral thin-film edge **emitter**)

IT 7440-02-0, Nickel, processes 11105-45-6
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(conducting layer; method of fabricating a field emission device with a lateral thin-film edge **emitter**)

IT 1344-28-1, Alumina, processes
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(insulating layer, secondary electron emission materials; method of fabricating a field emission device with a lateral thin-film edge **emitter**)

IT 7631-86-9, Silica, processes 113443-18-8, Silicon oxide (SiO)
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(insulating layer; method of fabricating a field emission device with a lateral thin-film edge **emitter**)

IT **7440-44-0**, Carbon, processes
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(metal-carbon-metal **cathode layer**; method of fabricating a field emission device with a lateral thin-film edge **emitter**)

IT 7440-50-8, Copper, processes
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(pillar with chrome cap; method of fabricating a field emission device with a lateral thin-film edge **emitter**)

IT 7440-21-3, Silicon, processes
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)

(resistive layer, amorphous; method of fabricating a field emission device with a lateral thin-film edge **emitter**)

IT 409-21-2, Silicon carbide, processes 12033-62-4, **Tantalum** nitride 25583-20-4, Titanium nitride
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(resistive layer; method of fabricating a field emission device with a lateral thin-film edge **emitter**)

IT 1304-28-5, Barium oxide, processes 1309-48-4, Magnesium oxide, processes
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(secondary electron emission materials; method of fabricating a field emission device with a lateral thin-film edge **emitter**)

RE.CNT 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L52 ANSWER 11 OF 37 HCAPLUS COPYRIGHT 2002 ACS
AN 2000:887848 HCAPLUS
DN 134:65126
TI Manufacture of electron emission components and display devices
IN Shimamura, Toshinori; Inoue, Hiroshi; Tatezono, Shinichi; Yamagishi, Takeshi
PA Sony Corp., Japan; Hitachi Funmatsu Yakin Co., Ltd.
SO Jpn. Kokai Tokkyo Koho, 7 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2000353466	A2	20001219	JP 1999-162815	19990609

AB Carbon coatings contg. C particles and thermosetting resins are formed on resist films and **cathode layers**, **IR** radiation is applied from light-transmitting substrate side to the coating side, where gate electrode layers function as masks, enhancing the adhesion of the coatings and substrates, as well as that of the C particles and the resins, and the resist films are dissolved, forming crown-like **emitters** in openings.

IT Cathodes
Coating process
Electrooptical imaging devices
(carbon coating in manuf. of electron emission components and display devices)

IT Particles
(carbon particles in manuf. of electron emission components and display devices)

IT **IR** radiation
(manuf. of electron emission components and display devices)

IT **7440-44-0**, Carbon, processes
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(carbon coating in manuf. of electron emission components and display devices)

L52 ANSWER 12 OF 37 HCAPLUS COPYRIGHT 2002 ACS
AN 2000:877083 HCAPLUS
DN 134:35150
TI Electron **emitters**, manufacture of the **emitters**, and display having the **emitters**

IN Negishi, Eisuke; Nakata, Satoshi
PA Sony Corp., Japan
SO Jpn. Kokai Tokkyo Koho, 9 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2000348601	A2	20001215	JP 1999-159485	19990607

AB The electron **emitters** are characterized by that they can be driven by low elec. field and that they are suitable for ultrathin film display. Fine holes, penetrating through an upper gate layer and an intermediate insulating layer and part of a lower **cathode layer**, are formed. The each hole has the bottom with bumpy texture, and an electron-emitting layer (e.g., a diamond-like carbon or amorphous carbon layer, preferably formed by filtered cathodic vacuum arc deposition, sputtering, or laser ablation) is formed on the bottom. The electron-emitting layer has the surface with bumpy texture because of the bottom of the hole. Many electrons can be emitted from the electron-emitting layer by a low elec. filed of .ltoreq.50 V/.mu.m, because the surface of the electron-emitting layer is lower than the surface of the **cathode layer** and the texture of the electron-emitting surface is bumpy. The electron-emitting layer is formed after formation of the intermediate insulating layer, so that the electron emitting layer is prevented from being damaged by the plasma in formation of the intermediate insulating layer.

IT Cathodes
Laser ablation
Sputtering
(formation of electron **emitter** having surface with bumpy texture made of carbon formed by sputtering or laser ablation)

IT Vapor deposition process
(plasma, vacuum, filtered cathodic; formation of electron **emitter** having surface with bumpy texture made of carbon formed by sputtering or laser ablation)

IT Electroluminescent devices
(ultrathin film; formation of electron **emitter** having surface with bumpy texture made of carbon formed by sputtering or laser ablation for)

IT **7440-44-0**, Carbon, processes
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(formation of electron **emitter** having surface with bumpy texture made of carbon formed by sputtering or laser ablation)

L52 ANSWER 13 OF 37 HCAPLUS COPYRIGHT 2002 ACS
AN 2000:861258 HCAPLUS
DN 134:36041
TI Manufacture of electron emission source for fluorescent display device
IN Ito, Shigeo; Yamaura, Tatsuo
PA Futaba Denshi Kogyo Co., Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 11 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE

PI JP 2000340100 A2 20001208 JP 1999-145559 19990525
AB The invention relates to a process for making an electron emission source for low-voltage operation, suitable for use in a fluorescent display device, wherein the process includes formation of carbon **layer** on a **cathode layer** from a carbon material selected from a group consisting of carbon nano-tube, fullerene, nanoparticle and nanocapsule.
IT Nanotubes
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(carbon; manuf. of electron emission source having carbon layer formed from specified carbon material for fluorescent display device)
IT Optical imaging devices
(fluorescent; manuf. of electron emission source having carbon layer formed from specified carbon material for fluorescent display device)
IT Carbon fibers, processes
Glass fibers, processes
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(manuf. of electron emission source for fluorescent display device contg.)
IT Field emission cathodes
Nanoparticles
(manuf. of electron emission source having carbon layer formed from specified carbon material for fluorescent display device)
IT Fullerenes
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(manuf. of electron emission source having carbon layer formed from specified carbon material for fluorescent display device)
IT **7440-44-0**, Carbon, processes 99685-96-8, Fullerene
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(manuf. of electron emission source having carbon layer formed from specified carbon material for fluorescent display device)
IT 7429-90-5, ALuminum, processes 7440-21-3, Silicon, processes
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(porous material; manuf. of electron emission source for fluorescent display device contg.)

L52 ANSWER 14 OF 37 HCAPLUS COPYRIGHT 2002 ACS
AN 2000:804072 HCAPLUS
DN 133:343594
TI **Emitter** in field-emission cathode and manufacture of the **emitter**
IN Inoue, Kazunori; Betsui, Keiichi; Nakaya, Tadashi
PA Fujitsu Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 11 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2000315453	A2	20001114	JP 1999-124461	19990430

AB The **emitter** consists of a substrate and an isotropic carbon fine powder-based elec. conductive cathode fixed on the substrate. The **emitter** is manufd. by forming an adhesive layer on the substrate,

applying the isotropic carbon fine powder on the adhesive layer, firing the composite, and pattering the adhesive **layer** and the **cathode** material **layer**. Alternatively, a mixt. contg. the carbon powder and elec. conductive adhesive solvent is applied on the substrate, dried, fired, and patterned to give the **emitter**. Other methods using low m.p. glass or using transfer technique are also claimed. The **emitter** is suitable for large area field-emitting display.

IT Adhesives
(conductive; for formation of **emitter** in field-emission cathode made of isotropic powder)

IT Solvents
(elec. conductive adhesive; for formation of **emitter** in field-emission cathode made of isotropic powder)

IT Adhesives
(for formation of **emitter** in field-emission cathode made of isotropic powder)

IT Field emission cathodes
(formation of **emitter** in field-emission cathode made of isotropic powder)

IT Etching
Photolithography
Transfers
(in formation of **emitter** in field-emission cathode made of isotropic powder)

IT Glass, processes
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(low-m.p.; for formation of **emitter** in field-emission cathode made of isotropic powder)

IT Solvents
(org., volatile; for formation of **emitter** in field-emission cathode made of isotropic powder)

IT **7440-44-0**, Carbon, processes
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(formation of **emitter** in field-emission cathode made of isotropic powder)

L52 ANSWER 15 OF 37 HCAPLUS COPYRIGHT 2002 ACS
AN 2000:781126 HCAPLUS
DN 133:357320
TI Manufacture of electron **emitter** used for luminescence optical imaging display device
IN Yamaura, Tatsuo; Ito, Shigeo
PA Futaba Denshi Kogyo Co., Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 6 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2000311590	A2	20001107	JP 1999-119071	19990427

AB The process comprises depositing a cathode conductor material on an insulating substrate, forming a carbon **layer** on the **cathode** conductor **layer** by applying a paste material contg. carbon nanotubes, a fullerene, nanoparticles, and/or nanocapsules, and depositing particles on the carbon layer, and removing the particles. The carbon nanotubes are formed almost parallel to the substrate surface,

thereby reducing the concn. of elec. field.
IT Cathodes
Optical imaging devices
Transfer printing
(manuf. of electron **emitter** used for luminescence optical imaging display device)
IT Fullerenes
RL: DEV (Device component use); USES (Uses)
(manuf. of electron **emitter** used for luminescence optical imaging display device)
IT **7440-44-0**, Carbon, uses
RL: DEV (Device component use); USES (Uses)
(manuf. of electron **emitter** used for luminescence optical imaging display device)

L52 ANSWER 16 OF 37 HCAPLUS COPYRIGHT 2002 ACS
AN 2000:420544 HCAPLUS
DN 133:67446
TI Manufacture of field-emission cold cathodes
IN Seko, Nobuya
PA NEC Corp., Japan
SO Jpn. Kokai Tokkyo Koho, 20 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 2000173448	A2	20000623	JP 1998-349216	19981209

AB Double insulator layers are deposited on Si substrates, photoresists with openings are formed on the insulator layers, the both insulator layers are etched with the photoresists as masks to form openings, **emitter** materials (e.g, **Mo**) are deposited vertically, sacrificial layer materials (e.g., Al2O3) are vapor deposited from inclined direction while spinning the substrates, 2nd deposition layers are formed on the sacrificial layers, creating **emitter** top layer, and the sacrificial layers are etched to lift-off the 2nd deposition layers. The cold cathodes thus manufd. have precision gate diam. smaller than resoln. limit of photolithog.
IT Photolithography
(manuf. of field-emission cold cathodes)
IT Etching
(of sacrificial layers in manuf. of field-emission cold cathodes)
IT Field emission
Field emission **cathodes**
(sacrificial **layers** in manuf. of field-emission cold cathodes)
IT 7439-98-7, **Molybdenum**, processes
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(**Mo** deposition in manuf. of field-emission cold cathodes)
IT 7429-90-5, Aluminum, processes
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(sacrificial layers in manuf. of field-emission cold cathodes)

L52 ANSWER 17 OF 37 HCAPLUS COPYRIGHT 2002 ACS
AN 1999:779284 HCAPLUS
DN 132:8216

TI Field emission device using resistors and fabrication of same
IN Kim, Jong-Min
PA Samsung Display Devices Co., Ltd., S. Korea
SO U.S., 11 pp.
CODEN: USXXAM
DT Patent
LA English
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 5998916	A	19991207	US 1998-38050	19980311

AB The title field emission device comprises a substrate, cathodes formed on the substrate, a resistor layer continuously formed on the cathodes, microtips formed on the resistor layer, an insulating layer formed on the resistor layer and the substrate, and a gate formed on the insulating layer, wherein the resistor layer is formed by depositing diamond-like carbon (DLC) on the cathodes with PECVD. Accordingly, fabrication yield is high since the adhesion of the resistor **layer** to the **cathodes** is improved. Various types of resistor layers can be formed since the resistor layer has excellent chem. durability. The reliability and consistency of the fabrication process is improved since the doping level is easily controlled.
IT Field emission
Field emission cathodes
Field **emitters**
Resistors
(field emission device using resistors and fabrication of same)
IT Vapor deposition process
(plasma; field emission device using resistors and fabrication of same)
IT **7440-44-0**, Carbon, processes
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(diamond-like; field emission device using resistors and fabrication of same)
RE.CNT 1 THERE ARE 1 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L52 ANSWER 18 OF 37 HCAPLUS COPYRIGHT 2002 ACS
AN 1998:735109 HCAPLUS
DN 130:9727
TI Field-emission cathode
IN Itoh, Shigeo; Watanabe, Teruo; Ohtsu, Kazuyoshi; Taniguchi, Masateru
PA Futaba Denshi Kogyo K.K., Japan
SO U.S., 9 pp.
CODEN: USXXAM
DT Patent
LA English
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 5834885	A	19981110	US 1996-761134	19961206

AB A field emission cathode which is capable of increasing bond strength between **emitters** and a resistive layer includes a laminated board, which includes a substrate, and at least a **cathode layer**, a resistive layer, an insulating layer, and a gate electrode layer which are deposited in the form of films on the substrate in order. The gate electrode layer and insulating layer are formed with through holes. The cathode also includes buffer layers made of an insulating material and formed on portions of the resistive layer exposed

via the through holes, as well as **emitters** arranged on the buffer layers, resulting in increased bond strength between the resistive layer and the **emitters**.

IT Buffers
Electric conductors
Electric insulators
Resistors
Semiconductor materials
(field emission cathodes contg.)

IT Carbides
Nitrides
Refractory metals
RL: DEV (Device component use); USES (Uses)
(field emission cathodes contg.)

IT Field emission cathodes
(having increased bond strength between **emitters** and resistive layers)

IT 7440-21-3, Silicon, uses
RL: DEV (Device component use); USES (Uses)
(amorphous; field emission cathodes contg.)

IT 7440-03-1, Niobium, uses **7440-44-0**, Carbon, uses 7631-86-9, Silica, uses
RL: DEV (Device component use); USES (Uses)
(field emission cathodes contg.)

RE.CNT 10 THERE ARE 10 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L52 ANSWER 19 OF 37 HCAPLUS COPYRIGHT 2002 ACS
AN 1998:334089 HCAPLUS
DN 129:61740
TI Manufacture of field electron **emitters**
IN Kimura, Hideyoshi; Kondo, Yukihiro; Nishioka, Koji
PA Matsushita Electric Works, Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 5 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 10134703	A2	19980522	JP 1996-286408	19961029

AB Insulator **layers** surrounding **cathode layers** have multilayer structures using materials (e.g., SiO2 and Al2O3) of different etching rates and having uneven sidewalls. Electron-emission-improving films (e.g., **Cr**) are vapor deposited on cathodes.

IT Cathodes
Electric field
Electron emission
(manuf. of field electron **emitters** with multilayer insulator sidewalls)

IT Dielectric films
Vapor deposition process
(manuf. of field electron **emitters** with multilayer insulator sidewalls and vapor-deposited emission-improving films)

IT 7440-47-3, **Chromium**, uses
RL: DEV (Device component use); USES (Uses)
(manuf. of field electron **emitters** with multilayer insulator sidewalls and emission-improving films from)

IT 1344-28-1, Alumina, uses 7631-86-9, Silica, uses

RL: DEV (Device component use); USES (Uses)
(manuf. of field electron **emitters** with multilayer insulator sidewalls and vapor-deposited emission-improving films)

L52 ANSWER 20 OF 37 HCAPLUS COPYRIGHT 2002 ACS
AN 1998:201892 HCAPLUS
DN 128:315938
TI Fabrication and simulation of a gated thin film **emitter**
AU Ko, Tae-Young; Chung, Bokeon; Lee, J. Y.; Jeon, D.
CS Department of Physics, Myong Ji University, Yongin Kyunggi-Do, Seoul, 449-728, S. Korea
SO J. Vac. Sci. Technol., B (1998), 16(2), 700-704
CODEN: JVTBD9; ISSN: 0734-211X
PB American Institute of Physics
DT Journal
LA English
AB The authors have fabricated a gated field **emitter** using a diamond-like carbon (DLC) film cathode. The process involved the deposition of DLC, insulator, and gate layers followed by back etching to expose a patterned DLC. The authors also simulated the emission behavior of the gated DLC cathode. The emission sites on the DLC film were simulated by multiple sharp points formed on the DLC surface. The electron trajectory and the emission current were studied as a function of structural parameters such as **cathode** height, oxide **layer** thickness, gate hole diam., and focus electrode.
IT Physicochemical simulation
(fabrication and simulation of gated thin film **emitter**)
IT Field emission cathodes
(thin-film; fabrication and simulation of gated thin film **emitter**)
IT **7440-44-0**, Carbon, uses
RL: DEV (Device component use); USES (Uses)
(diamond-like; fabrication and simulation of gated thin film **emitter**)
IT 7782-40-3, Diamond, uses
RL: DEV (Device component use); USES (Uses)
(field **emitter**; fabrication and simulation of gated thin film **emitter**)

L52 ANSWER 21 OF 37 HCAPLUS COPYRIGHT 2002 ACS
AN 1997:717545 HCAPLUS
DN 128:9519
TI Electrical field **emitters**
IN Ito, Shigeo; Nakada, Hisashi; Iwasa, Tadashi
PA Futaba Denshi Kogyo Co., Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 9 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 09283007	A2	19971031	JP 1996-111151	19960409
	JP 3235461	B2	20011204		

AB The title **emitters** comprise a glass cathode substrate, a **cathode** electrode **layer** formed on the substrate, a pl. no. of conical **emitters** each formed apart on the cathode electrode, an insulator layer between the **emitters** on the cathode electrode, and 1st gate electrodes formed on the insulator layer

to give a field emission cathode unit. The **emitters** further comprise a perforated 2nd gate electrode as a cutoff electrode provided above the cathode unit and an anode electrode provided further above. The same voltage is impressed on the 1st and 2nd gate electrodes to give a space charge satn. region so as to attract electrons from the region to the anode electrode by impressing a few tens of V on the anode electrode. The arrangement consequently gives the **emitters** a significantly low anode voltage.

IT Electrodes
(cutoff; elec. field **emitters**)

IT Field emission
Field emission cathodes
(elec. field **emitters**)

IT Space charge
(satn.; elec. field **emitters**)

IT 7429-90-5, Aluminum, properties
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process); USES (Uses)
(cathode; elec. field **emitters**)

IT 7439-98-7, **Molybdenum**, properties
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process); USES (Uses)
(conical **emitter**; elec. field **emitters**)

IT 50926-11-9, ITO
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process); USES (Uses)
(transparent anode; elec. field **emitters**)

L52 ANSWER 22 OF 37 HCAPLUS COPYRIGHT 2002 ACS
AN 1997:275548 HCAPLUS
DN 127:27075
TI Fabrication of metal field **emitter** arrays on polycrystalline silicon
AU Kim, II Hwan; Lee, Chun Gyoo; Kim, Yeo Hwan; Park, Byung Gook; Lee, Jong Duk
CS Inter-University Semiconductor Research Center (ISRC) and School of Electrical Engineering, Seoul National University, Seoul, 151-742, S. Korea
SO J. Vac. Sci. Technol., B (1997), 15(2), 468-471
CODEN: JVTBD9; ISSN: 0734-211X
PB American Institute of Physics
DT Journal
LA English
AB Cone-shaped metal field **emitter** arrays were fabricated on a single heavily doped polysilicon layer. From the observation of the metal field **emitter** fabricated on the single-polysilicon layer, it was noticed that the irregular shape of the gate aperture was caused by the large grain size of heavily doped polysilicon after oxidn. Therefore, in order to obtain a good shape, the double layers of polysilicon where one was heavily doped and the other was not doped were used. The undoped polysilicon layer was consumed for the gate oxide layer and the doped polysilicon layer was used to serve as a conducting **cathode layer**. The small grain size of the undoped polysilicon after oxidn. led to an improved shape of the gate aperture which rendered a stable emission characteristic.

IT Field emission cathodes
(fabrication of metal field **emitter** arrays on polycryst. silicon)

IT 7723-14-0, Phosphorus, uses

RL: MOA (Modifier or additive use); USES (Uses)
(doping; fabrication of metal field **emitter** arrays on polycryst. silicon)

IT 7439-98-7, **Molybdenum**, properties 7440-21-3, Silicon, properties
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process); USES (Uses)
(fabrication of metal field **emitter** arrays on polycryst. silicon)

L52 ANSWER 23 OF 37 HCAPLUS COPYRIGHT 2002 ACS
AN 1996:598918 HCAPLUS
DN 125:236040
TI Manufacture of vertical fine cold cathodes
IN Yoshiki, Masayuki
PA Nippon Electric Co, Japan
SO Jpn. Kokai Tokkyo Koho, 3 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 08185795	A2	19960716	JP 1994-324561	19941227
JP 2737675	B2	19980408		

AB The title process comprises formation of a protruding step on a Si substrate, sequential lamination of a 1st insulating, a 1st gate conductive, a 2nd insulating, an **emitter** conductive, a 3rd insulating, and a 2nd gate conductive layer on the substrate, selective removal of the laminate on the step leaving the layers on the sides of the step and exposing the cross sections of the layers, and etching of the 2nd or the 3rd insulating layer deeper than the **emitter** conductive layer and the **emitter** conductive layer making the ends of the layer sharp.

IT Cathodes
(field-emission, thin **emitter** layers with sharpened tips for silicon vertical field **emitters**)

IT 7439-98-7, **Molybdenum**, processes
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(film; for **emitter** layers of vertical fine cold cathodes)

IT 12627-41-7, Tungsten silicide
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(film; for gate layers of vertical fine cold cathodes)

IT 7440-21-3, Silicon, uses
RL: DEV (Device component use); USES (Uses)
(thin **emitter** layers with sharpened tips for silicon vertical field **emitters**)

L52 ANSWER 24 OF 37 HCAPLUS COPYRIGHT 2002 ACS
AN 1996:527611 HCAPLUS
DN 125:156379
TI Changing the surface quality of field **emitters**
IN Ochiai, Hisataka; Ito, Shigeo
PA Futaba Denshi Kogyo Kk, Japan
SO Jpn. Kokai Tokkyo Koho, 5 pp.
CODEN: JKXXAF
DT Patent

LA Japanese
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 08148083	A2	19960607	JP 1994-311343	19941122
	JP 2852356	B2	19990203		

AB In field-emission-type cathodes, in which **cathode layers**, insulator films, and gate electrode layers are successively formed on substrates, holes are formed in the electrode and insulator layers, and **emitters** are formed in the holes, the holes are filled with resists, the resists on the **emitters** are removed, the exposed **emitters** are coated with materials (e.g., TiN) with small work function, and the remaining resists are peeled off.

IT Work function
(coating to change the surface quality of field **emitters** by materials of small work function)

IT Coating materials
(to change the surface quality of field **emitters** by materials of small work function)

IT Cathodes
(field-emission, coating to change the surface quality of)

IT 7440-25-7, **Tantalum**, uses 7440-33-7, Tungsten, uses
RL: DEV (Device component use); USES (Uses)
(coating to change the surface quality of field **emitters**)

IT 25583-20-4, Titanium nitride
RL: DEV (Device component use); USES (Uses)
(coating to change the surface quality of field **emitters** by materials of small work function)

L52 ANSWER 25 OF 37 HCAPLUS COPYRIGHT 2002 ACS
AN 1996:444117 HCAPLUS
DN 125:102817
TI Electron emitting devices
IN Tomihari, Yoshinori
PA Kansai Nippon Electric, Japan
SO Jpn. Kokai Tokkyo Koho, 4 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 08129951	A2	19960521	JP 1994-265044	19941028
	JP 2964885	B2	19991018		
	US 5814926	A	19980929	US 1995-547879	19951025
PRAI	JP 1994-265044		19941028		

AB The devices contain conical cathodes formed on substrates, lower insulator **layers** circling the **cathodes** with cavities in between, gate electrodes on the insulator layers, upper insulator layers on the gate electrodes, and electron coverging electrodes on the top, part of which is eccentric regarding the cathodes.

IT Electron sources
(electron emitting devices with focusing electrodes)

IT 7439-98-7, **Molybdenum**, uses 7440-21-3, Silicon, uses 7440-33-7, Tungsten, uses
RL: DEV (Device component use); USES (Uses)
(electron emitting devices with focusing electrodes)

L52 ANSWER 26 OF 37 HCAPLUS COPYRIGHT 2002 ACS

AN 1996:237612 HCAPLUS
DN 124:276250
TI Field emission cathodes and manufacture thereof
IN Nakatani, Tadashi; Betsui, Keiichi; Fukuda, Shinya; Toyoda, Osamu
PA Fujitsu Ltd, Japan
SO Jpn. Kokai Tokkyo Koho, 10 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 08017331	A2	19960119	JP 1994-149910	19940630

AB The cathode has an insulating film and a gate electrode having an opening on the substrate or an **emitter** electrode thereon, and a cathode film consisting of an lower and an upper layer with inclination of edges of the latter (e.g., from **Mo**, Si, Ti, W) larger than that of the former (e.g., from Ni, **Au**, or **Pt**). A high resistance layer may be placed between the upper and the lower **cathode layer** or between the lower **cathode layer** and the substrate or the **emitter** electrode thereon. The title process comprises inclined incidence evapn. deposition of a sacrifice layer on the gate electrode without closure of the opening, and sequential vertical inclination evapn. deposition of the lower **cathode layer** without closure of the opening and the upper **cathode layer** resulting in closure of the opening. The **emitter** tip is formed to a small radius of curvature and electrons can be taken out at a lower voltage.

IT Electron sources
(**Mo** and **Mo** silicide film for gate electrodes for metallic field emission cathodes)

IT Cathodes
(field-emission, **Mo** and **Mo** silicide film for gate electrodes for metallic field emission cathodes)

IT 7440-06-4, **Platinum**, uses 7440-21-3, Silicon, uses 7440-32-6, Titanium, uses 7440-33-7, Tungsten, uses 7440-57-5, **Gold**, uses
RL: DEV (Device component use); USES (Uses)
(**Mo** and **Mo** silicide film for gate electrodes for metallic field emission cathodes)

IT 7439-98-7P, **Molybdenum**, processes 7440-02-0P, Nickel, processes 11104-85-1P, **Molybdenum** silicide
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); SPN (Synthetic preparation); PREP (Preparation); PROC (Process); USES (Uses)
(**Mo** and **Mo** silicide film for gate electrodes for metallic field emission cathodes)

L52 ANSWER 27 OF 37 HCAPLUS COPYRIGHT 2002 ACS
AN 1995:818973 HCAPLUS
DN 123:244612
TI Field-emission cathodes and their manufacture
IN Ito, Shigeo; Yamada, Akira
PA Futaba Denshi Kogyo Kk, Japan
SO Jpn. Kokai Tokkyo Koho, 8 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 07176264	A2	19950714	JP 1993-344480	19931220
	JP 2734965	B2	19980402		

AB The field-emission cathodes comprise substrates, **cathode layers**, insulating **layers**, gate electrodes, and **emitters** formed in etched opening in the insulators; the **emitters** are prepd. by (1) ion-beam evapn. of low-m.p. metals and (2) surface deposition of metals by electron-beam evapn. or sputtering to form a tip. The cathodes are manufd. at low cost.

IT Metals, processes
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(field-emission cathodes)

IT Ion beams
Sputtering
(in manuf. of field-emission cathodes)

IT Evaporation
(electron-beam, in manuf. of field-emission cathodes)

IT Cathodes
(field-emission, particle-beam evapn. and sputtering in formation of tips for)

IT 7429-90-5, Aluminum, processes 7439-89-6, Iron, processes 7439-91-0, Lanthanum, processes 7439-95-4, Magnesium, processes 7439-96-5, Manganese, processes 7439-98-7, **Molybdenum**, processes 7440-02-0, Nickel, processes 7440-03-1, Niobium, processes 7440-05-3, Palladium, processes 7440-06-4, **Platinum**, processes 7440-15-5, Rhenium, processes 7440-16-6, Rhodium, processes 7440-18-8, Ruthenium, processes 7440-25-7, **Tantalum**, processes 7440-26-8, Technetium, processes 7440-29-1, Thorium, processes 7440-31-5, Tin, processes 7440-32-6, Titanium, processes 7440-33-7, Tungsten, processes **7440-44-0**, Carbon, processes 7440-47-3, **Chromium**, processes 7440-50-8, Copper, processes 7440-57-5, **Gold**, processes 7440-61-1, Uranium, processes 7440-62-2, Vanadium, processes 7440-66-6, Zinc, processes 7440-67-7, Zirconium, processes
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(field-emission cathodes)

L52 ANSWER 28 OF 37 HCAPLUS COPYRIGHT 2002 ACS
AN 1995:613159 HCAPLUS
DN 123:24173
TI Field-emission cathodes
IN Ito, Shigeo
PA Futaba Denshi Kogyo Kk, Japan
SO Jpn. Kokai Tokkyo Koho, 7 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 07094075	A2	19950407	JP 1993-260389	19930927

AB The spindle-type field-emission cathodes (having corn-shaped **emitters** on a cathode electrode through a resistance layer) have conducting insulators between the resistance layer and the **emitters**, which are insulated by short-circuit current between the gate and the **emitters**. The conducting insulators may be formed

on each **emitter**. The conducting insulators comprising Al, Ag, MnO2, or (p-n junction) Se may be insulated through electromigration. The resistance layer may comprise amorphous Si or Ta2O5.

IT Cathodes
(field-emission, field-emission cathodes with conducting insulator on **emitters**)

IT 1313-13-9, Manganese dioxide, uses 7429-90-5, Aluminum, uses 7440-22-4, Silver, uses 7782-49-2, Selenium, uses
RL: DEV (Device component use); USES (Uses)
(field-emission cathodes with conducting insulator on **emitters**)

IT 1314-61-0, **Tantalum** oxide (Ta2O5) 7440-21-3, Silicon, uses
RL: DEV (Device component use); USES (Uses)
(resistance **layers**; field-emission **cathodes** with conducting insulator on **emitters**)

L52 ANSWER 29 OF 37 HCAPLUS COPYRIGHT 2002 ACS
AN 1995:584484 HCAPLUS
DN 123:46158
TI Cathode for gaseous electric discharge panel and formation of the cathode
IN Fujii, Kozo; Sawai, Hideo; Koiwa, Ichiro; Terao, Yoshitaka; Yamagata, Toshikazu
PA Oki Electric Ind Co Ltd, Japan
SO Jpn. Kokai Tokkyo Koho, 7 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 07085799	A2	19950331	JP 1993-227647	19930914

AB The cathode comprises a cathode mother material, elec. conductive oxide layer having multiple pores piercing from surface of the oxide layer to inner part of the oxide layer, and an electron **emitter** substance crystal of an alk. earth metal oxide impregnated in the pores. Formation of the cathode involves the following steps; (1) forming the elec. conductive oxide **layer** on the **cathode** mother material, (2) forming the multiple pores in the oxide layer, (3) impregnating the the electron **emitter** substance in the pores, and (4) crystg. the electron **emitter** substance. The cathode is capable of discharging by low operating voltage.

IT Cathodes
(discharge, for gaseous discharge panel)

IT Optical imaging devices
(elec.-discharge, cathodes for)

IT 120897-67-8P, Calcium **chromium** lanthanum oxide (CaCrLaO3) 164294-50-2P, Calcium **chromium** cobalt lanthanum oxide (CaCrCoLaO3)
RL: DEV (Device component use); PNU (Preparation, unclassified); PREP (Preparation); USES (Uses)
(**cathode** elec. conductive **layer**; **cathodes** for gaseous discharge panel)

IT 68338-92-1, **Chromium** 6, iron 52, nickel 42
RL: DEV (Device component use); USES (Uses)
(cathode mother material; cathodes for gaseous discharge panel)

IT 12004-04-5P, Barium aluminate (BaAl2O4)
RL: DEV (Device component use); PNU (Preparation, unclassified); PREP (Preparation); USES (Uses)
(electron **emitter** in cathode; cathodes for gaseous discharge

panel)

L52 ANSWER 30 OF 37 HCAPLUS COPYRIGHT 2002 ACS
AN 1995:330517 HCAPLUS
DN 122:94649
TI Manufacture of field emission cathodes
IN Ito, Shigeo; Watanabe, Teruo; Ochiai, Hisataka; Ootsu, Kazuyoshi; Taniguchi, Masateru
PA Futaba Denshi Kogyo Kk, Japan
SO Jpn. Kokai Tokkyo Koho, 5 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 06124649	A2	19940506	JP 1992-270580	19921008
JP 3180466	B2	20010625		

AB Title field emission cathode is manufd. by forming **cathode** conductor **layer**, insulator layer and gate layer on an insulating substrate, opening holes through the insulator and the gate **layers**, anodizing the **cathode** conductors in the holes to form resistance layers in an electrolyte in which the **cathode** conductor **layer** is used as the anode and a passive electrode as the cathode, then forming cone-shaped **Mo emitters** on the resistance layers. This simple manuf. process provide uniform independent resistance layer for each **emitter**.
IT Anodization
(manuf. of field emission cathodes)
IT Cathodes
(field-emission, manuf. of)
IT 7439-98-7, **Molybdenum**, uses 7440-25-7, **Tantalum**, uses 7631-86-9, Silica, uses
RL: DEV (Device component use); USES (Uses)
(manuf. of field emission cathodes contg.)
IT 1314-61-0, **Tantalum** oxide (ta2o5)
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(manuf. of field emission cathodes contg.)

L52 ANSWER 31 OF 37 HCAPLUS COPYRIGHT 2002 ACS
AN 1994:691018 HCAPLUS
DN 121:291018
TI Luminescent cathode **emitter** tubes and manufacture of them
IN Kashiwakura, Yasuhide; Kanehisa, Osamu; Morishita, Hajime; Matsukyo, Hideji; Shiiki, Masatoshi; Toyama, Hisashi; Morita, Yasukazu; Nakayama, Tsunekichi
PA Hitachi Ltd, Japan; Hitachi Device Eng
SO Jpn. Kokai Tokkyo Koho, 12 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 06103893	A2	19940415	JP 1992-248397	19920918

AB Title manufg. involves forming an adhesive film on the inside surface of its face plate, depositing a fluorescent particle layer on the adhesive layer, and vibrating to give the particle layer an increased bulk d. and

adhesion, wherein the adhesive contains a deliquescent inorg. compd. and an aq.-sol. polymer. The manufg. gives the bulbs an increased fluorescent particle layer d. and decreased pinholes.

IT Luminescence, cathodo-
(bulb; fluorescent particle layer coating on)

IT Adhesives
(deliquescent inorg. compd. and aq.-sol. polymer. for fluorescent particle **layer** on **cathode emitter** tube)

IT Coating materials
(luminescent, for fluorescent particle **layer** on **cathode emitter** tube)

IT 584-08-7, Potassium carbonate 9002-89-5, Poly(vinyl alcohol) 9003-05-8, Poly(acrylamide) 9003-39-8, Poly(n-vinylpyrrolidone) 9005-32-7, Alginate 9005-37-2, Propylene glycol alginate 9011-16-9D, Methyl vinyl ether-maleic anhydride copolymer, alkyl monoester with 10279-63-7, Potassium **chromium** sulfate 25231-54-3, Acrylamide-diacetone acrylamide copolymer 25322-68-3, Polyethylene glycol
RL: DEV (Device component use); MOA (Modifier or additive use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(adhesive mixt. for fluorescent particle coating on cathode **emitter** tubes)

IT 7447-41-8, Lithium chloride, processes 7646-85-7, Zinc chloride, processes 7758-09-0, Potassium nitrite 7779-88-6, Zinc nitrate 10043-52-4, Calcium chloride, processes 10124-37-5, Calcium nitrate 10377-60-3, Magnesium nitrate
RL: DEV (Device component use); MOA (Modifier or additive use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(deliquescent particles; adhesive mixt. for fluorescent particle coating on cathode **emitter** tubes)

L52 ANSWER 32 OF 37 HCAPLUS COPYRIGHT 2002 ACS
AN 1994:691016 HCAPLUS
DN 121:291016
TI Cathode **emitters** and manufacturing thereof
IN Toyoda, Osamu; Betsui, Keiichi; Fukuda, Shinya; Nakatani, Tadashi
PA Fujitsu Ltd, Japan
SO Jpn. Kokai Tokkyo Koho, 11 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 06020592	A2	19940128	JP 1992-334391	19921215
	JP 06016984	A2	19940125	JP 1992-334754	19921215
PRAI	JP 1992-113708		19920506		

AB Title manufg. involves (1) depositing a 1st material for forming a **cathode**-forming **layer**, (2) depositing a 2nd material for forming **emitter** tip neg.-feedback resistors, (3) depositing a 3rd material for forming **emitter** tip electron emitting edges, (4) forming masks over regions for formation of the **emitter** tips, (5) etching to give undercuts below the masks, and (6) subsequently forming an insulator film and a gate electrode film, wherein the 1st, 2nd, and 3rd materials are made of semiconductor materials. The manufg. gives simple prepn. of the **emitter** tip neg.-feedback resistors and low-resistance electron emission edges independently.

IT Cathodes
(**emitter**; manufg. for easy sep. formation of neg.-feedback

resistor and low-resistance electron emission edge for)
IT Semiconductor materials
(for formation of cathode and **emitter** tip neg.-feedback resistor and electron emitting edge in cathode **emitter**)
IT Electric resistors
(neg.-feedback; formation in manufg. cathode **emitter**)
IT 7439-98-7, **Molybdenum**, processes 7440-25-7, **Tantalum**, processes
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(semiconductor; cathode electrode in cathode **emitter**)
IT 7440-21-3, Silicon, processes
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(semiconductor; neg.-feedback resistor in cathode **emitter**)

L52 ANSWER 33 OF 37 HCAPLUS COPYRIGHT 2002 ACS
AN 1994:547007 HCAPLUS
DN 121:147007
TI Field emission device and fabrication thereof
IN Watanabe, Teruo; Ito, Shigeo; Ootsu, Kazuyoshi; Taniguchi, Masateru; Nishimura, Norio; Ochiai, Hisataka; Yamaguchi, Manabu
PA Futaba Denshi Kogyo Kk, Japan
SO Jpn. Kokai Tokkyo Koho, 4 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 05299011	A2	19931112	JP 1992-99420	19920420
JP 2636630	B2	19970730		

AB Title fabrication involves (1) forming a cathode conductor, an insulator, and a gate successively on an insulated substrate, followed by opening a hole to the insulator and the gate, (2) depositing a Si layer to form a resistor **layer** on the **cathode** exposed through the hole, (3) anodizing the Si layer to give a peeling layer followed by depositing **Mo** to give an **emitter** on the resistor layer, and (4) removing unnecessary portions of the deposition layer by removing it together with the peeling layer to form sep. resistors in every **emitter** formed on the device. The fabrication provides a no. of **emitter**/resistor units in the device simultaneously.
IT Electric resistors
(formation of, in **emitter**, in fabrication of field emission device)
IT Electron emission
(field, device, fabrication of, formation of resistor in)
IT 7440-42-8, Boron, uses 7723-14-0, Phosphorus, uses
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(dopant, in silicon resistor, for fabrication of field emission device)
IT 7440-21-3, Silicon, uses
RL: USES (Uses)
(doped, resistor in **emitter** for field emission device, fabrication of)

L52 ANSWER 34 OF 37 HCAPLUS COPYRIGHT 2002 ACS
AN 1994:546649 HCAPLUS
DN 121:146649
TI **MOS**-controlling static induction thyristors

IN Saito, Masayuki
PA Yazaki Corp, Japan
SO Jpn. Kokai Tokkyo Koho, 7 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 06021437	A2	19940128	JP 1993-65604	19930324
PRAI JP 1992-95259		19920415		

AB Title thyristor comprises a 1st cond.-type semiconductor substrate, 2nd cond.-type 1st and 2nd gate diffusion layers formed on the substrate, a 1st cond.-type **cathode** diffusion **layer** formed between the gate diffusion layers, a 2nd cond.-type cathode-**emitter**-short diffusion layer, and a doped polysilicon layer formed via an insulator layer between the gate diffusion **layer** and **cathode**-**emitter**-short diffusion layer to give 1st and 2nd cond.-type **MOS** transistors. The thyristor gives an improved switching characteristics without an increase of **MOS** capacitance.

IT Thyristors
(**MOS**-controlling, static induction, improvement of switching characteristic without increase of **MOS** capacitance)

IT 7440-21-3, Silicon, uses
RL: USES (Uses)
(doped, for gate electrode, in **MOS**-controlling thyristors)

L52 ANSWER 35 OF 37 HCAPLUS COPYRIGHT 2002 ACS
AN 1993:593688 HCAPLUS
DN 119:193688
TI Semiconductor devices having **MOS** anode short structure with excellent turn-on-loss and turn-off-loss trade off
IN Shimizu, Naohiro
PA Toyo Electric Mfg Co Ltd, Japan
SO Jpn. Kokai Tokkyo Koho, 11 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 05095112	A2	19930416	JP 1991-280646	19911001
JP 3160330	B2	20010425		

AB In a bipolar semiconductor device comprising a laminate of a **cathode** n-**emitter layer**, a p-base layer or p-gate layer, a high-resistance semiconductor layer, an n-buffer layer, and an anode p-**emitter** layer, the anode p-**emitter** layer is etched, an **MOS** anode short layer which works as a short layer is arranged in such a way that it contacts with the anode p-**emitter** layer facing the etched groove but not contacting the n-buffer layer, the space between the etched groove and part of the **MOS** anode short layer which works as a n+ short layer is coated with a SiO2 film and then coated with a metal. The trade off of turn-on-loss and turn-off-loss is improved.

IT Semiconductor devices
(**MOS** anode short arrangement, with excellent trade off of turn-on-loss and turn-off-loss)

L52 ANSWER 36 OF 37 HCAPLUS COPYRIGHT 2002 ACS
AN 1978:82762 HCAPLUS
DN 88:82762
TI **Gold**-diffused thyristor
IN Moyson, Joseph
PA General Electric Co., USA
SO U.S., 5 pp.
CODEN: USXXAM
DT Patent
LA English
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 4066484	A	19780103	US 1975-616404	19750924
PRAI US 1974-517523		19741024		

AB **Au**-doped fast turnoff thyristor is manufd. conventionally through the diffusion of the **cathode emitter layer**. Following diffusion of the **cathode emitter layer**, the diffusion mask is left in place and an auxiliary dopant that stimulates carrier recombination is diffused into the body. Use of the cathode **emitter** mask ensures that the auxiliary dopant diffuses only into the cathode **emitter** and the area there around, where it is most effective in enhancing fast turnoff characteristics, but does not contribute substantially to excess leakage current. Moreover, utilization of a preexisting mask minimizes the cost involved in the **Au** doping process. Both **Au**-diffused fast turnoff triacs and semiconductor controlled rectifiers can be made by substantially the same method.

IT Thyristors
(silicon, **gold**-diffused)
IT 7440-57-5, uses and miscellaneous
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(doping with, of silicon thyristors for rapid turnoff)
IT 7440-21-3, uses and miscellaneous
RL: USES (Uses)
(thyristors, **gold**-diffused)

L52 ANSWER 37 OF 37 HCAPLUS COPYRIGHT 2002 ACS
AN 1972:65270 HCAPLUS
DN 76:65270
TI Electron conduction, electron emission, and electroluminescence of MIM [metal-insulator-metal] sandwich structures with aluminum(III) oxide insulating layers
AU Dittmer, G.
CS Philips Forschungslab. Aachen G.m.b.H., Aachen, Ger.
SO Thin Solid Films (1972), 9(2), 141-72
CODEN: THSFAP
DT Journal
LA English
AB The elec. properties of Al-Al2O3-**Au** sandwiches with different Al2O3 structures were investigated. Sandwich **cathodes** with Al2O3 **layers** .ltoreq.100 .ANG. thick, or with thicker thermally oxidized or anodically grown dense Al2O3 layers, give monotonic current-voltage characteristics. The lifetime of such cathodes is limited to a few min by uniform **Au** ion diffusion at higher emission yields. Sandwich cathodes having a multilayered Al2O3 structure with at least one heavily doped porous Al2O3' layer exhibit current-voltage curves with voltage-controlled neg. resistance. At >5 V, the sandwich and the emission currents may be attributed to Fowler-Nordheim tunnelling. The

electron-emitting regions of the sandwich structure show faint electroluminescence with peaks of emitted photons at 2.3 and 4.1 eV. From a consideration of different electron conduction mechanisms, related to obsd. elec. cond., electron emission, and electroluminescence, a band structure was derived for amorphous Al2O3' decorated with **Au** pptns. The investigations led to the construction of a sandwich cathode with extended lifetime. The main features of this cold **emitter** are a special multilayer structure of the Al2O3 insulator and a discontinuous upper **Au** electrode.

IT Cathodes
(aluminum-aluminum oxide-**gold** sandwich structures as, lifetime of)

IT Luminescence
(electro-, of aluminum-aluminum oxide-**gold** sandwich structures)

IT Electron emission
(from aluminum-aluminum oxide-**gold** sandwich structures)

IT Energy level, band structure
(of aluminum oxide, in sandwich structures with aluminum and **gold**)

IT Electric conductivity and conduction
Electric current-potential relationship
(of aluminum-aluminum oxide-**gold** sandwich structures)

IT 1344-28-1, properties
RL: PRP (Properties)
(elec. insulation by and elec. properties of, in sandwich structures with aluminum and **gold**)